

# Virginia Wildlife

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# Virginia Wildlife

*Dedicated to the Conservation of  
Virginia's Wildlife and Related Natural Resources  
and to the Betterment of  
Outdoor Recreation in Virginia*

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**PUBLICATION OFFICE:** Commission of Game and Inland Fisheries, 7 N. Second St., Richmond, Virginia

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## JUNE

Volume XXV/No. 6

### IN THIS ISSUE

### PAGE

Editorial: Outdoor Manners . . . . .	3
Letters . . . . .	3
An Appraisal of Virginia's Wildlife Resources . . . . .	4
The Sly Ones . . . . .	6
The Sycamore . . . . .	8
What Happened to the Rabbit? . . . . .	9
Fishin' Holes: Piedmont Pickerel . . . . .	11
The Fresh-Water Bonefish . . . . .	12
Conservationogram . . . . .	13
Charlottesville Bird Study . . . . .	14
Gas Guns Sharpen Your Shooting Eye . . . . .	16
Bird of the Month: Black-and-white Warbler . . . . .	23
Drumming Log . . . . .	24
Youth Afield . . . . .	25
On the Waterfront . . . . .	26
It's the Law! . . . . .	27
Back Cover: Safety . . . . .	28

**COVER:** The brook trout is one of the most prized of game fishes, not only because of its beauty and gaminess but also because it makes its home in our most picturesque waters—those cold, swift streams where the natural environment provides the perfect accompaniment for the vivid hues and graceful form of the “brookie.” Our artist: Duane Raver.

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## Outdoor Manners

WE Americans are fiercely proud of our individual rights. We oppose and resent interference in our private affairs. We like to think that one of our inalienable rights is personal freedom—freedom from regimentation and regulation, and freedom to choose our own courses of action. Yet we demand laws and regulations which drastically restrict personal freedom of action, and we insist upon participating ourselves in the operation of the machinery of government through which these laws and regulations come about.

What we really have to be proud of and have to guard is not so much personal freedom as it is the ability and the right to govern ourselves—individually and collectively.

There is no such thing as an inalienable *right* to govern without a corresponding *ability* to govern. And the *right* stems from the *ability*, not the other way around. "Free men" can govern themselves collectively only when enough of them have learned the art of governing themselves individually. If everyone could, and did, govern himself effectively, then indeed would there be little need for laws and regulations that restrict freedom.

There is danger in too much freedom—danger that it will be abused. There also is danger in too much government—in too many laws and too much regulation—even if it is we ourselves who attempt to govern too much. All rules and regulations encroach upon personal liberty; but those that do little more than to require the exercise of good manners also undermine the very self-discipline which is the root of self-government. That we find it necessary to enforce good manners at all is itself a reflection of one shortcoming we have yet to overcome.

Good manners is "the doing of that which you should do although you are not obliged to do it," and includes "all things which a man should impose upon himself, from duty to good taste."

It is never good manners to act selfishly or carelessly.

It is not good manners to despoil the land on which all of us must live, to litter the countryside with trash, or to befoul our streams and shorelines with refuse.

It is not good manners to trespass on private property, whether lands and waters are posted or not.

It is not good manners to take more than one's share of fish or game just because there is an opportunity to do so.

It is not good manners to risk killing or maiming one's fellow man on the highway, on the water, or in the hunting field.

It is not good manners to operate watercraft thoughtlessly, without concern for the annoyance, or even danger, that will result when swimmers, fishermen, or other boats are nearby.

It is never good manners to encroach upon the rights of others to their fair share of the benefits and enjoyment that stem from the great wealth of outdoor resources with which this land is blessed.

Whether we use our outdoor heritage for profit or for pleasure, we all find too much regulation objectionable. We find bad manners even worse.—J. F. Mc.

### Children Should Pay Too

I believe that if children are allowed to trout fish they should be made to pay for a permit to do so. I have observed whole families on a stream, and each child allowed eight trout.

I believe in children fishing and enjoying the outdoors, but I believe they should pay a dollar toward raising those trout they catch, and I do not believe three and four year olds should be allowed free where they can only spoil the fishing for others.

Charles E. Padgett  
Roanoke

*We are in favor of adults taking children fishing, but agree that the privilege of youngsters to fish free can be abused, especially on trout streams. When fishermen load up their cars with children in the hope of bringing home that many more limits of stocked trout, it is doubtful that the experience contributes much to developing sportsmanship in the children.—Ed.*

### Wildlife Nomenclature

I enjoyed the fine article on trout fishing by Don Carpenter in your April issue, and also the piece by Chris Devereux and Nancy Mullikin on esoteric wildlife nomenclature. I believe the correct expression for a group of pheasants is not "an eye" but "a nyse," deriving from the Latin *nidus* (nest). Also, the term "gaggle" is properly applied to geese only when they are on the ground or water; when flying, they are a *skein*. Snipe, when in flight, are a *wisp*.

I think it was Red Smith, the sports writer, who referred in this connection to "a *prevarication* of fishermen" and "an *inebriation* of sports writers"; the angling writer Sparse Grey Hackle is credited with "a *dearth* of trout."

Ed Zern  
New York, New York

MR. Leo A. Aubrey ("You've Never Caught a Bream," January 1964) seems not to realize what a thicket he's getting into in this matter of nomenclature—or what a spot he's putting you on (you, the editor, and you, the readers).

For if you've never caught a bream, neither have you ever shot a quail or a partridge, or a rabbit, or an elk. Nor have you ever climbed a sycamore or seen a robin. The list is endless.

T. M. Forsyth  
Bremo Bluff

*We agree that this matter of wildlife nomenclature is indeed a "thicket." But it is fun to thrash around in it sometimes, and occasionally kick out a hare, a wapiti, or a bison.—Ed.*

### Wants Article on Rabbits

PLEASE have more published in VIRGINIA WILDLIFE about food and cover for rabbits in eastern Virginia, as our wild rabbits are fading away in and around Norfolk.

Capt. Carlton Harris  
Norfolk

*Glad to oblige, Captain. Just turn to page 9.—Ed.*

# AN APPRAISAL OF VIRGINIA'S

**C**ONTRARY to popular belief, man's effect on wildlife in Virginia has not been totally bad. Some native species have not been able to adjust readily to the changes that man's taming of the wilderness has brought to the land. Others actually have benefited tremendously from some of these same changes. But in any event, through a combination of benevolence and self-interest, man the sportsman has seen fit to pay the way for game species in our modern world.

At no time in history has more been spent to preserve and increase those species which man holds in highest esteem for sport and recreation. Without this support and interest, more of our game species might have slipped slowly toward oblivion, as have some of our lesser wild creatures. As Dr. Joe Linduska of the Remington Arms Company put it recently, "If bluebirds weighed a half-pound and lay well to a pointing dog we would not now be wondering at their disappearance and vainly seeking ways to bring them back." Well meaning but uninformed organizations and individuals who seek to stop completely what they consider "wanton killing" of game species—doves, for instance—should grasp the significance of the preferred position that game species occupy today.

At the time of its colonization, much of Virginia was covered with vast expanses of mature timber. Mast, fruits and berries must have been plentiful, but brushy plants few. This would have been ideal for turkeys and squirrels. Deer were present, but probably not nearly as abundant as they are today, judging by maximum population densities we now find on timbered lands that are approaching maturity. Grouse should have fared well under primeval conditions, but quail and rabbits would have been limited by the edge cover around natural forest openings.

The Indians were not numerous and they harvested only enough game to meet their meager needs. Streams were clear and stable in those days because of excellent watershed cover, and most of those in the mountain areas contained native brook trout. Wolves, cougars, bears, and lesser

A report to the Governor's Conference on Natural Resources, April 22, 1964.

Man's activities have not always been detrimental to wildlife. This kind of deer habitat is not to be found in unbroken stands of mature timber.

Commission photo by Kesteloo



Photo by L. M. Chace, from National Audubon Society

Cutting of primeval forests and the practice of extensive agriculture increased quail habitat tremendously. A combination of efficient farming and reversion of cultivated land to forest is reducing it again.

predators roamed the land, subsisting on the surplus wildlife crop not taken by the Indians.

Into this scene moved the European settler with his axe, plow, gun and fire. The virgin forest was his enemy: it covered the land on which he wanted to grow crops; harbored wild beasts dangerous to his family and livestock; and constantly threatened to reclaim his fields. At first, trees were cut and burned just to make room for the settlers. As the population grew, and trade with Europe increased, there became a greater and greater demand for forest products and the forests were felled for profit.

Wildlife was taken then for food, and it played a vital role in feeding our early settlers until agriculture could take over the job. Far more important to the wildlife than relentless hunting, however, were the changes man was impressing on the face of the land. Much of the tidewater and piedmont sections were stripped of their forests and turned into large plantations. Deer and turkey numbers suffered accordingly. Quail and rabbits thrived in these new surroundings.

Early logging and clearing was for the creation of fields, and regrowth of brush, which would have provided deer browse, was discouraged. Later, when mountain lands were logged and left untended, uncontrolled fires and persecution by market and hide hunters prevented the deer from taking advantage of what could have been improved conditions.

By 1900 most of the state's virgin forests had been cut. The bison, the elk, the passenger pigeon, the cougar and the wolf had joined the ranks of species already extinct in the Old Dominion, and deer had been exterminated in many areas.



# WILDLIFE RESOURCES

By CHESTER F. PHELPS  
*Executive Director*



U. S. Fish and Wildlife Service photo

Current changes in land use favor the adaptable and prolific mourning dove, and this fine game bird has been on the increase. It is probable that this species will be able to provide even more hunting in the future than it does now.

Watersheds had been uncovered. Cold, stable streams and rivers became dry washes or raging muddy torrents, depending on the precipitation. Fish life suffered accordingly. Poor farming practices and marginal farms resulted in extensive soil erosion and poor production. Although primitive farming practices created some good wildlife habitat, the general loss in soil fertility was reflected in the wildlife crop as well.

By this time the cries of conservationists began to be heeded. People began to see desolation around them, and realized that drastic steps would have to be taken to correct mistakes of the past. The National Forests were created and given fire protection. Soil conservation work was begun on farmlands to stop erosion and increase productivity. Many marginal farms were abandoned and allowed to revert to forest for which the land was better suited.

Laws and regulations were passed to halt the slaughter of wildlife. The Commission of Game and Inland Fisheries was formed to enforce these laws and initiate programs for the preservation and perpetuation of wildlife. Deer were imported and restocked in areas where they were absent. Finding the brushy regrowth in logged areas and on abandoned farms to their liking, they made a remarkable comeback. A similar program was later started for turkeys, and they have been successfully restored in many areas.

Many fads and fallacies had their day as the young profession of wildlife management tried its wings. The wildlife refuge was thought to be the ultimate management tool at one time, and the protection it gave threatened game species in some sections undoubtedly did something for the cause; but its usefulness in restocking the surrounding countryside

with game was comparable to the usefulness of a thimble in filling a bath tub. Refuges still have a place in wildlife management. They serve as protected islands where migratory and threatened species may retreat from the hunter and the effects of civilization. But they are not flowing springs from which issues forth a bounteous supply of game for the hunter.

When we learned that game could be mass produced on game farms and in fish hatcheries, this too seemed to be an ultimate answer. Game could be turned out in almost any quantity, depending only upon the amount of money available. It seemed logical that releasing large quantities of wildlife throughout the state would boost populations to whatever level we wished to pay for. It didn't work out this way. Game farm animals, and hatchery fish, couldn't live where the habitat wasn't suitable any more than could the wild ones we were seeking to replace. Thus, stocking became little more than an unproductive annual expense. The recovery rate and production costs were so far out of balance that all but trout stocking has been eliminated as economically wasteful. Trout can be produced at the rate of 3 of stocking size for a dollar, the recovery rate is quite high, and trout fishermen pay the bill through purchase of the special one-dollar trout license.

It is sometimes practical to restock for the purpose of re-establishing native species where suitable habitat lacks breeding stock. An especially successful effort of this kind was the Game Commission's stocking of deer west of the Blue Ridge, which increased the deer harvest from less than 300 twenty years ago to almost 12,000 today.

It also is practical sometimes to stock exotic species which can take advantage of newly created types of habitat that do not suit native species so well. But stocking wildlife to increase man's harvest from areas where wild breeding stock already exists has produced a uniform record of waste and failure.

As a result of all these experiences, wildlife management  
(Continued on page 20)

Although bears are much more restricted in their range than are deer, they tend to benefit from some of the same forest game management practices that benefit deer. This one was photographed in the Shenandoah National Park last year by Dr. M. E. Jacobs.



EVERY hunter has memories of hunts gone by. A few of these he holds as something special. They are well polished and cared for—tucked away in that particular corner of his mind where he stores those pleasant thoughts and where they can be often dusted off and lived again. These are the real trophies of the hunt.

One of my very special memories concerns a fox, a handsome red rascal that reigned over his territory as monarch and seemed to delight in accepting an occasional challenge from the hounds.

When I first met this fellow it was shortly after dawn on a bright February morning. The sun had just broken above the eastern horizon and was threatening to dissolve the light frost that tinted the earth. The dogs, ten hounds in all, were in full cry and approaching fast. They had "jumped" the fox after much cold trailing during the pre-dawn darkness.

Raymond Cottrell, my fox hunting mentor and owner of the hounds, and I were catching our breath on a wooded hillside overlooking a green rye field. We had just completed a hectic ride and a long run in an effort to head off the fast moving dogs and catch a glimpse of the fox. As the voices of the dogs increased in volume Raymond predicted that fox was a red. "A gray," explained Raymond, "would not cover as much territory. Gray foxes head for the thickest cover they can find and play a dodging game among the briars and blowdowns. A red fox, on the other hand, attempts to put plenty distance between himself and the hounds."

The hounds were closing upon us now and the hunt was nearly over. Either we'd get the fox or the dogs would lose the trail as the scent evaporated with the fast vanishing frost.

The fox broke from cover on the far side of the rye field. He seemed to know that his scent wouldn't linger long in the warming field as he confidently strode in our direction. He showed no sign of haste although the hounds were scarcely three hundred yards behind. He walked deliberately, picking his steps and pausing now and then for a casual glance over his shoulder.

The animal had dignity. He was unruffled and looked unreal as his bright copper coat contrasted to the emerald green field. His great bushy tail was held proudly and looked fully as large as his body. The keen, searching nose and alert, sharp pointed ears advertised that he was one wily customer.

I almost forgot that I was carrying a shotgun as the fox approached. I slipped off the safety as he trotted into easy range and very slowly lifted the old double to my shoulder.

The animal was so regal looking that I hated to shoot him. I was a youngster and this was one of my first fox hunts. Raymond carried no gun and I thought he was waiting for me to shoot.

As I took aim Raymond reached over and slowly but firmly pushed the gun down. Shaking his head as I looked at him he whispered, "Let's not shoot this one. We can chase him again."

I learned that morning that the fox was a game animal, created to run before the hounds. In later years I hunted them for the chase only. Seldom did I kill one. In fact, there were few hunters in my area who ever took a fox to claim the \$3.00 bounty.

In many parts of the country fox hunters seldom carry a gun. Many fox hunters have unkind words for those who



## *The Sly Ones*

By MAJOR JACK RANDOLPH  
*Fort Lee*

do shoot foxes. Even trappers have stopped taking foxes. Low fur prices and the elimination of bounties in several states offer the trapper little incentive for fox trapping. Most trappers share the hunters' respect for foxes and will seldom go out of their way to take them unless the price is right or if they are paid to do it. As a consequence foxes have found themselves in the enviable position of having few enemies except disease and starvation. Oddly this isn't necessarily good.

In some quarters the fox is thought of as a harmful predator. I used to share this belief but I found it difficult to prove. I discovered that the fox preys mostly upon rats, mice and other small creatures, many of which are not beneficial to man. Undoubtedly the fox takes his share of small game, but his share isn't an awful lot. It is possible that the fox is actually beneficial to ground nesting birds. Foxes prey upon rats that, in turn, prey upon eggs found in ground nests.

Predation plays a major role in developing hearty, wily small game animals and the fox is a stern teacher. Weaker small game falls easy prey as the fox does wildlife a service by eliminating the weak and sickly, thereby preventing the start and spread of disease. When the fox's numbers are in balance to the carrying capacity of the land, there are few who won't agree that the fox is kind of nice to have around.

The fox is one of our most controversial animals. Aside from the ceaseless argument concerning his alleged damage to game or domestic animals the fox's family tree provokes many a heated conversation.

Here in Virginia we have two species of foxes, reds and grays. The red, of course, is the traditional fox of history. There is very little apparent difference between the Ameri-

can red fox and the red fox of Europe. He has proven, both here and in the Old World, that he can live close to man's booming civilization. He's probably the originator of "peaceful coexistence."

Years ago the silver fox was the ultimate prize of trappers and hunters. Silver fox furs in the age of high fashion brought staggering prices on the fur market. Silvers were extremely rare and, in the wild, they are now probably even harder to find. The reason is apparent—there is no silver fox as a species. The silver is a color phase of the red fox, an accident of nature that created a beautiful and rare fur. Today, of course, silver fox furs are no longer so highly prized. The silver phase of the red fox has been successfully raised by commercial fur farmers and ranch furs are relatively common.

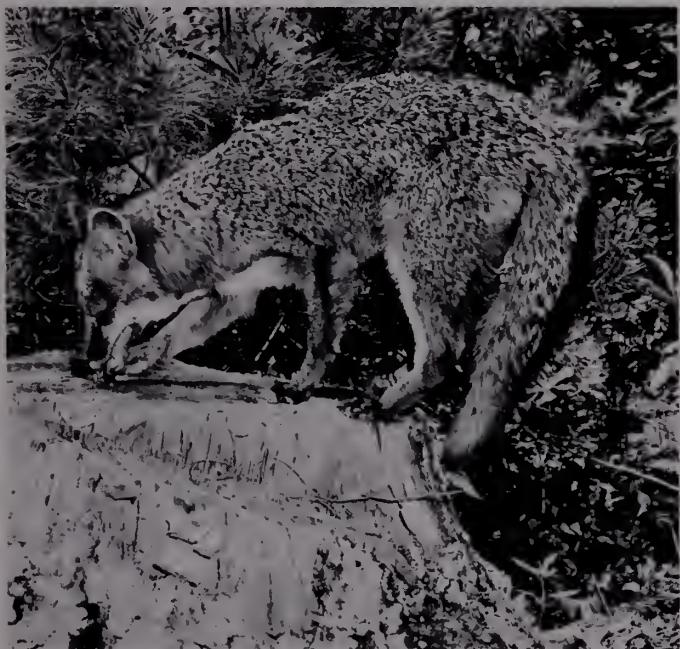
Another color phase of the red fox is known as a "cross fox." The name comes from dark markings down the back and across the shoulders of the animal. This was also a highly prized fur in years gone by. Perhaps the oddest part of all of this is that the silver and cross foxes seemed to occur only in the northern extremes of the red foxes' range. Perhaps one fox out of many litters of fox pups would be a silver or cross while all of the others would be normal red foxes.

The "trade-mark" of a red fox is the white tip on the tail. The gray is known as the only fox with the black stripe along the top of the tail. Gray foxes are rusty red along the lower parts of their bodies, causing inexperienced people to incorrectly identify them as reds.

Gray foxes are quite cat-like. Their tracks are round and closely resemble those of a cat. The tracks of the red fox are more pointed and quite like those of a small dog. The gray can climb trees but the red cannot. Reds prefer semi-open country while grays tend to stick to lower, thicker terrain.

Both red and gray foxes possess keen senses and can prove to be a worthy adversary to both hunters and trappers. As a rule the foxes are silent neighbors we seldom see and

**Gray foxes are rusty red along the lower parts of their bodies, and are mistaken sometimes for reds. This one shows typical markings, including a black stripe down the tail that terminates at the tip. One trademark of the red fox is a white tip on his tail.**



hardly realize that they are around. But when foxes multiply beyond the carrying capacity of their range we begin to have a problem. As competition for food increases, foxes do make inroads upon the small game population, but this is the least of the problem. As foxes become more numerous the chance for disease increases. Undernourished animals competing vigorously for food fall easy prey to disease. In foxes a common disease is rabies.

Among the weakened foxes rabies spreads rapidly. The rabid animals become a serious threat as they attack livestock and, sometimes, humans. Recently rabies outbreaks have occurred more frequently. This is probably due to larger fox populations of recent years. This is where the fox problem lies, a very real problem in some areas.

A logical approach to solving this problem is to reduce the fox population in the troubled areas. There is no intent to eradicate foxes. The aim is to reduce the population to a point where foxes will be in balance with the feed available and not apt to contract disease, at least in epidemic proportions.

Probably the most effective method of fox control is selective trapping by professional trappers. Professional trappers can effectively reduce the fox count in a given area in a short time. Their methods are such that they will take only foxes, molesting no other game or domestic animals.

The bounty system has been traditionally employed as a predator control method for centuries. Recently several states took a hard look at their bounty systems and didn't like what they saw. Generally it was noted that bounties were a waste of money. Either they were being paid for animals that would have been killed otherwise or they, in themselves, were not sufficient incentive to direct the efforts of hunters and trappers towards taking certain animals. Another problem of the bounty system is that it is not selective. An animal or bird may be a problem in one area and not in another. Unfortunately these areas seldom complied with political boundaries such as county or state lines. A professional trapper could much better direct his efforts towards these trouble spots.

One state is experimenting with a new approach to the problem. This idea is to cut down the fox population through the use of non-poisonous drugs. The drugs under trial render a fox sterile. Drugged baits are placed in fox range during the mating season. Animals that ingest the drugged baits fail to reproduce their kind. There are more refinements to this approach but this is the general concept. It appears that this system may have potential to prevent large fox populations from building up but it can do nothing to reduce an existing overabundance. It seems that sportsmen could provide an equally effective control of growing fox populations by taking some of the foxes they pursue with hounds. This would not only be less expensive but more rewarding in terms of recreational hours spent afield.

Until a better method is found the steel trap is the most effective tool for reducing fox populations in a given area. An example of the efficiency of trapping can be found at Camp Pickett. Here foxes find ideal habitat and multiply rapidly. There are very few fox hunters who use Camp Pickett and the fox count remains very high. Some controls are required to keep the foxes in balance with the growing small game population and to prevent the incidence of rabies.

(Continued next page)

# The Sycamore

By A. B. MASSEY  
V.P.I. Forestry and Wildlife

OUR native sycamore or plane tree (also called button ball and button wood), frequent in low grounds and along water courses, is readily recognized by the white mottled bark. It has the reputation of developing into the largest of our broadleaf trees in girth of the trunk and height. The height may be questionable in comparison with that of the tulip tree. Early settlers in Ohio recorded trees having circumferences of 43, 47 and 67 feet. These were probably over 400 years old. A sycamore in Indiana is reported as being 42 $\frac{1}{4}$  feet in circumference. The largest sycamores have been found in the lowgrounds, subject to floods, of the Ohio and Mississippi River basins. Sycamores of nice size occur in Virginia; however, we do not have record of excessively large trees. An old tree on the Smithfield property, near the western border of the V.P.I. campus, measures 20 feet in circumference. The trunk is short with five large limbs 6-11 feet in circumference. Examination of cores of the first five inches of the trunk indicate that the tree is 200 or more years old. The trunk of large sycamores is often hollow. It is related that the pioneers used hollow logs of such to store grain. These were called gums. It is also stated that at times some pioneers lived in hollow sycamores until they could build a cabin.

The name sycamore has been variously applied. A fig tree in Biblical lands is known as the sycomore (notice the o in the middle of the name), which is a large spreading fig tree (*Ficus sycomorus*). Zacchaeus climbed into a sycomore tree (the fig) above the people that he might see Christ passing (Luke, chapter 19). Some translations erroneously state that he climbed into a sycamore tree. In earlier days it was thought that the leaves of a European maple resembled those of the sycomore fig, hence applied the name sycamore.

## The Sly Ones (Continued from page 7)

Fortunately, Camp Pickett's game warden, Sgt. Carol Martin, is an expert trapper. Using very few traps and operating just before and after the hunting season, he takes about 75 foxes annually from the 46,000 acre military reservation. Martin believes that his catch is sufficient to keep the animals in balance. As a rule his catch runs half reds and half grays.

A good trapper, Martin has a tremendous respect for the cunning of foxes. He takes great pains to rid his traps and equipment of foreign odors prior to the trapping season. To accomplish this the traps and steel trap stakes are boiled in wood chips until they take on a dark, almost black color. Wax is melted in the boiling water, forming a film on the surface. As the traps and stakes are withdrawn from the vat they take on a light coating of wax, sealing in the scent of steel and preventing rust. Once prepared, the traps are hung in an evergreen tree until used.

All trappers are students of nature. They study animals until they know their habits thoroughly. Once they become familiar with the animal they become aware of those regular habits that are the animal's weakness and that make him fair game for the trap.

maple (*Acer pseudoplatanus*) with the difference in the spelling. Our plane tree having leaves similar to the sycamore European maple became known as the sycamore tree.

The native plane tree or sycamore (*Platanus occidentalis*) ranges widely from Maine to Minnesota south to Texas and Florida. Fossil material indicates that plane trees grew in Greenland in past ages.

The flowers of the sycamore are unisexual. They are very small and individually inconspicuous. The male, staminate, and female, pistillate, flowers are crowded in separate balls, 1 $\frac{1}{2}$  to two inches in diameter, which hang conspicuously on slender leafless stems, one ball to the pendent stem. The fruits are tiny hairy nutlets. In the fall and winter when the fruit balls break up, the fruits appear over the ground as tawny down. The leaves are broad with three or more shallow lobes. The base of the leaf stalk, petiole, is hollow capping over the bud for next year's growth. Conspicuous bracts, stipules, occur at the attachment of the leaf and encircle the twig. Thin sheets of the outer bark on the trunk of younger trees and limbs of old trees peal off and become trashy over the ground.

Two introduced species, the London plane tree (*Platanus acerifolia*) and Oriental plane tree (*Platanus orientalis*), occur in ornamental plantings. They have two or three seed balls pendent on stems whereas the native species has only one ball on a stem. Some advocate planting London plane trees along streets. The pealing of the bark and the tendency of leaves to start falling the latter part of summer makes their desirability questionable.

Sycamore wood is reddish brown, light, fairly hard and difficult to split. It is used to some extent for boxes, cooperage, interior finish, butcher blocks and formerly for ox yokes.

The native species is commonly affected with a leaf and twig blight in the spring. The trees appear to have been frosted when there has been no frost. The affected tree develops new leaves and soon appears normal. The London plane is not noticeably affected by the blight.

Sgt. Martin capitalizes upon his intimate knowledge of foxes. He places his trap sets where foxes frequent and he goes to great pains to avoid leaving human scent near a set. His methods pay off, enabling him to keep the fox population at Pickett in balance with the least expenditure of time and money. He would prefer that hunters harvest the foxes and enjoy the sport of the chase. As it is, he dislikes doing the job for them.

There is no panacea for the fox problem. In a great many areas there is no problem as the balance is maintained. Where problems do exist each has to be dealt with separately. Possibly a certain amount of hunting pressure will maintain the balance in some locales. When things get out of hand, trappers can usually straighten them out quickly. Generally, however, a reasonable amount of hunting should preserve the balance and make calls for trappers unnecessary.

The problems of foxes are just one more example of the results of changes in an animal's environment. When man moves in, nature must adjust the master plan. Often man must play a role in this adjustment. The balance must be preserved or the consequences are apt to be severe. The fox has a well earned place in the sporting scene. It is unfortunate that we must control him with wholesale methods at times. Let's hope we can avoid this in the future.

## Hunters Ask:

# WHAT HAPPENED TO THE RABBIT?

By JIM McINTEER  
*Chief, Education Division*  
Commission photos by Kesteloo

THE cottontail hasn't been seen around some of his old haunts in his usual numbers of late, and he has a lot of friends inquiring anxiously about his welfare.

It seems that something has happened to him all right. Something always is happening, or is about to happen to him. Throughout his short but often highly productive life, he is hunted mercilessly and without respite by everything that crawls, runs or flies and feeds on flesh; and if one of them does not get him first he has parasites, disease and the wheels of automobiles to contend with. From his shallow, fur-lined nest to the end of the road, his existence is precarious and his fate uncertain.

Probably the surest thing about Br'er Rabbit's life is that it will not be a long one. Game biologists have found that a third or more of all young rabbits may never live to leave their nests under their own power, and in one study of 226 tagged wild cottontails only two ever reached their second birthdays! Sometimes the odds are a trifle better. Biologist John Redd found that two rabbits out of 19 killed by five hunters at Camp Pickett one day last February had been tagged almost two and a half years before, and one of them already was an adult when it was tagged and released back in 1961.

Rabbits are born naked, blind, completely helpless and about the size of a man's thumb. Mother rabbit puts them in a shallow nest she has carefully scooped out and lined with vegetation and soft hair from her own abdomen. She covers them over with grass and leaves, and the secret nursery is not easy to locate; but sharp eyes or a keen nose often lead a hungry raider to it anyway.

Young cottontails were the most frequently found mammals in one analysis of several thousand crow stomachs. Some of these young rabbits may have been found dead by the crows, but many undoubtedly were stolen from nests alive; and in any event they were all young rabbits that did not get beyond the infant stage. While crows are accused of many other things (sometimes rightly, sometimes wrongly), the extent of their depredation of rabbit nests often is overlooked. Biologists recognize them as an important factor in the control of summer rabbit populations in many localities.

Rabbit nests are well concealed and hard to find, and the little ones do not stay in them long. Yet mortality at this stage can be startlingly high.



He's still the best known and most popular little game animal in the land. May his tribe increase. Given half a chance, it will.

House cats, that find a litter and come back time and again and carry off the helpless young one by one; dogs, that often locate nests by scent; farm machinery working over fields or mowing coverts where nests are concealed; flesh fly larvae, which burrow into nestlings' abdomens; snakes, skunks, in fact every meat eater capable of preying on anything from mice on up—they all take their toll of nestling rabbits wherever and whenever they find them.

Nevertheless, a lot of rabbits win the first lap of their race against death. They develop rapidly, and are ready to strike out on their own in less than three weeks, which is none too soon because mother rabbit may have mated the day they were born and already be within a week or ten days of depositing a new litter in the nest. Things do happen swiftly in the rabbit world!

When young cottontails venture forth from their nests they become better able to evade cats, dogs and farm machinery. On the other hand, out from under the protective camouflage of nest covering, they are more vulnerable to the swift strike of rapacious birds and to the hunting techniques of such efficient predators as the weasel, fox and bobcat.

The rabbit's main defense is his birth rate. Here is an example of how it works. The rabbit population on a 186-acre study area decreased a whopping 84% between Septem-

(Continued on next page)



ber and January—284 rabbits on September 1; 184 on November 1; 102 on December 1; and 41 on New Year's Day. Hunters accounted for a mere ten, while other mortality factors brought the population down to the land's carrying capacity at its mid-winter low. One might surmise that the rabbits on this particular bit of land were headed for early extinction; but there really was no cause for alarm. In another month or two breeding would be in full swing again, and 20 does producing 5 litters each, averaging 4 young to the litter, could add up to 400 new rabbits before the next September. In addition, some of the young females from the earliest litters would add their own first offspring to the population by summer's end. Something had to cancel out about half this potential spring and summer increase before even the first of September rolled around, in addition to the previously observed fall and winter losses, just to keep the annual early fall population from spiraling upward.

This is one good reason for the frequently heard complaint: "I saw lots of young rabbits on my place during the summer, but before hunting season most of them had disappeared." Actually, it is a perfectly normal thing that happens in "good" rabbit years as well as "poor" ones.

The cottontail's amazing reproductive potential plays several different roles in the ecology of the brier patch.

It is the species' safeguard against extinction, of course.

It also is directly responsible for the rabbit's startlingly high mortality rate. By subjecting his environment to a population pressure that constantly threatens to explode and inundate the land in rabbits, the cottontail's high birth rate makes his own equally high death rate inevitable. Something has to remove rabbits from the land as fast as they are born—if not predators, hunting and accidents, then perhaps parasites, disease, malnutrition or even more subtle mortality factors that seem to be naturally associated with overly dense populations. Yet in this perpetual see-saw race between birth and death there is order and purpose. The reproductive rate of the rabbit, along with that of most other small vegetarians in the animal world, plays a role in life's master



Along the edge between thick escape cover and open land the rabbit usually finds the greatest abundance of foods that are to his liking.

plan that goes far beyond the welfare of these defenseless creatures themselves; for it is in the plan that those who gnaw, browse and graze shall turn herbs and grass into flesh that carnivores also may live. Ecologically there is no waste. Born to die, even the lowly cottontail does not die in vain.

The rabbit's high birth rate, and the means by which its force is "contained," account for striking fluctuations in rabbit populations, both from season to season and from year to year. Species with relatively low reproductive rates and correspondingly low mortality rates usually maintain fairly stable populations. A good breeding season, or a

slightly lowered mortality, will not bring about an immediate and spectacular population increase among the slow breeders. Things happen more gradually, and compensating factors have time to adjust, and bring about a new balance between birth and death at a slightly higher population level than before. But not so with fast breeders like the cottontail. Just a slight relaxing of nature's controls, and almost overnight dozens more rabbits are left on the land than there otherwise would have been, each pair potentially capable of tripling its number every four or five weeks and each striving with all its might to do just that.

Long before there can be an adjustment or compensation that would again equalize births and deaths, there comes a peak rabbit abundance that the land cannot long sustain. Since predators are all among the slow breeders, whose populations react comparatively sluggishly to such influences as improved food supply, it is not they but other attrition factors that are most likely to flare up in an over-crowded hedgerow slum and smother the incipient rabbit population explosion; and some of these other factors such as tularemia, or "rabbit fever," at least from the standpoint of the rabbit hunter, may be entirely too efficient as control mechanisms. They are almost sure to "over-correct," and bring our rabbits rather too suddenly from peak to nadir in their population "cycle." Then it takes time for reproduction

(Continued on page 22)



A contented rabbit is one that finds places to hide, feed, loaf, and raise young, without having to travel far from one to find the others.



# Fishin' Holes



Ninth in the series of articles on some of the favorite angling hot spots in Virginia.

## PIEDMONT PICKEREL

By BOB GOOCH  
*Troy*

THE Old Dominion angler hankering for a lunker pickerel is most likely to find the cantankerous old cuss lurking in some eastern Virginia tidal river—the Chickahominy, for example.

There are also some good pickerel in the Cowpasture and other rivers rising on the eastern slopes of the Alleghenies in the western part of the state. But I know him best in the small streams that meander through the hills of Piedmont Virginia.

Lunkers are rare in these delightful little streams, but there are many compensating factors.

The fish I have in mind is the eastern chain pickerel, more often called pike. He's well-known from the fresh water ponds of Cape Cod and the lakes of Maine to the bass rivers in Florida and the bayous of Louisiana. Throughout his range he's alternately cursed and praised.

Old-timers in Piedmont Virginia called him jack, and as a boy that was the only name I knew him by until I became an avid reader of outdoor literature and added to my practically acquired outdoor education.

Other pickerels roam our waters—the redfin or mud pickerel, for example, but none of them develop any appreciable size and are not important as game fish. However, the angler is likely to encounter them from time to time in most small clear streams.

The pickerel is a lover of weed beds. There he can hide and ambush foolhardy or unsuspecting minnows and frogs. In fact, weeds are absolutely essential for successful spawning. If the pickerel's adhesive eggs don't attach to vegetation, they fall into the bottom mud and suffocate. Weed beds are not too common in Piedmont streams, but where they exist in quiet or even a fairly fast moving current, they're a good bet for at least one fish.

In the absence of weeds, look for them in quiet water around logs, the shoreline, debris, etc. Pickerel do not frequent rapids or white water.

The chain pickerel does not flourish in farm ponds. These small impoundments that occasionally turn up a pickerel are either fed by a small stream where the fish reproduce, or pickerel have been released in the pond by some well meaning and optimistic fisherman. So released, the fish often grow rapidly as most of these ponds are over stocked with small pan fish. In fact some pond owners stock a few pickerel just to remove the surplus bluegills.

As is the case with all members of the pike family, minnows and small fish make up the major portion of the pickerel's diet. He will not turn up his nose at a small frog and I doubt that many small birds or animals so unfortunate as to fall on the water near a lunker pickerel's lair, live to tell the story. Once in a while a sucker fisherman will land a fair pickerel on a gob of worms, but worms are not recommended as bait for old chainsides.

I lived in Maryland for a few years and while there, delighted in fishing pickerel and yellow perch hot spots such as the South and Seven rivers. These tidal estuaries are interesting fishing and the veterans up there used to say pickerel fishing was best during good oyster years. No doubt crayfish, salamanders and other forms of fresh and salt water marine life are included in the pickerel's diet. In Maryland, though, the favorite bait was "bull minnows."

The pickerel is by nature an antagonistic fish, a tiger of the weed beds, and king of his domain. I have always considered his vicious strike his chief contribution to the angling world. Toss a small surface lure into a pickerel inhabited pool in a small stream and the little pool seems to almost explode as the king of the stream smacks it—usually more in anger and indignation than from hunger. Food is usually plentiful in these Piedmont streams.

As a fighter the pickerel probably leaves a little to be desired, though he can come up with some thrilling, plug rattling jumps.

The pickerel fisherman can take his pick of angling methods. An 18 incher will tear a yellow streamer to shreds and rattle the guides on your favorite fly rod, but in the streams I fish, heavy vegetation overhangs the banks and makes fly

(Continued on page 18)



Commission photo by Kesteloo  
Lunkers are rare, but there are compensations. One is that small stream pickerel fishing seldom suffers "summer doldrums."

# The Fresh-Water Bonefish

By LEO A. AUBREY  
Fort Lee

THE bonefish (*Abula vulpes*) ranks very high on the sport fisherman's list for many good reasons. It is extremely shy and wary and must be approached with much caution; in fact it must be stalked. The bait must be presented in as natural and life-like manner as possible. Long casts must be made in order not to spook the fish, and then it may take hours before one will take the bait. Once hooked, and the fisherman can enjoy the thrill of the fight. In spite of, or perhaps because of, these drawbacks some fishermen travel hundreds and sometimes thousands of miles to try for bonefish.

For most of us, of course, catching a bonefish will always remain in the realm of daydreams. Yet here in Virginia there is a fish, found in almost every type of water from mountain streams to tidal rivers, that can deservedly be called the fresh water bonefish. It, too, must be fished with all the caution, skill and care called for in fishing for bonefish. It, too, must be approached cautiously. It, too, must (in some cases) be stalked and a long cast made. And it, too, must have the bait presented in a natural manner. Also like the bonefish it, too, may take hours to take the bait but once the bait is taken, the hook set and the fight on, the hours spent waiting will not seem to have been wasted.

A fish with all these attributes must surely be one of the better known game fishes. Is it perhaps the brown trout? No, although it, too, like the brown trout, is not a native species but was introduced to this country from Europe. Unlike the brown trout it soon wore out its welcome and, in fact, is thoroughly detested by many fishermen. The fish we are speaking is the carp (*Cyprinus carpio*), one of the wisest and most elusive of the fresh water fishes in the world. One of the reasons for its unpopularity, of course, may be its habit of rooting for vegetation, thereby roiling up the water. Perhaps another reason is that the carp is so hard to get that it is merely a case of "sour grapes."

The most popular method of taking carp is by pre-baiting a known carp hangout with chopped vegetables, sometimes for as long as a week or ten days; then when the carp have lost some of their caution and are accustomed to feeding in that section the fisherman will bait up with dough-balls, marshmallows, whole grain corn, cooked vegetables or perhaps with some secret concoction that has proved to be a good bait before. This method, however, is hardly a sporting one and may even be against the fishing laws in some states.

I do 90 per cent of my fishing with a fly rod, and have brought in hundreds of carp on one. The first time I was out fishing for bluegills, I had fished the mouth of a certain creek very successfully for a few weekends and had caught many good sized bluegills and a few small bass from this spot. One day, not getting any hits in the creek. I moved on up to the river and cast upstream, allowing the bait to float down naturally. After the third or fourth cast I felt a slight tug on the line and, having some slack line since I was using live bait (worms, to be exact). I allowed the fish to run until the line was straight. Then, thinking I

had a bluegill or a small bass on, I tightened up and set the hook. For a moment I thought I was hooked to a log; but the fun soon began! After about ten minutes I landed the fish, a two pound carp only; but it had fought like a four pounder. Before the afternoon was over I had caught 17 more, weighing between one and three pounds, and had had some fine sport. I should mention that this took place in the springtime and that the water was very high and muddy.

These carp were caught on an 8 1/2 foot fly rod with a nine foot level leader testing six pounds; the hooks used were no. 6 Aberdeen. Contrary to a generally held belief it is not necessary to cover the barb on the hook. For bait a small red worm is best, and it should be hooked only once through the collar to allow it to wriggle freely. The more natural it appears the better the chance of getting a carp to take it. After the carp has taken the bait, allow some time for it to mouth it as it will spit out the bait at the first suggestion that all is not right. I have been fishing for carp for many years now, using the method described above, and have had much sport and enjoyment out of it. I might mention here that if you are fishing from a boat, be very careful about banging the oars or scuffling your feet. This will spook the carp (and other fish as well) every time. If you are walking the shore line, step carefully as vibrations carry a long way into the water. When casting from shore make your cast in the direction in which you are walking.

The largest carp that I have ever landed with a fly rod (or any other rod, for that matter) weighed ten pounds, and it took me an hour to land it. I've had much larger ones on but couldn't hold them. One very large carp—it got away, don't they always?—put quite a bend in the tip of a bamboo fly rod and another carp, a six pounder, cracked the same rod slightly. A third carp put the finishing touches to this particular rod. It happened this way:

One day while fishing the James river near Hopewell I met another fisherman, and after exchanging the usual greetings he asked me how I had gotten such a bend in my rod. Well, I told him, and I could almost read his mind: "This guy must be pulling my leg; who ever heard of catching carp on a fly rod!" Disbelief was written all over his face. I said, "So long" to my riverside acquaintance; walked about 20 feet; cast in; got a strike; and landed a four pound carp! Of course, I broke my rod, but it was worth it to prove to this skeptic that it could be done.

Although I've only mentioned worms as bait for a fly rod, carp can also be taken on artificial lures such as small spinners and streamers and will sometimes, though rarely, take a dry fly. They are sometimes taken on live minnows and have even been taken on bass plugs.

Some of the hot spots, especially during the spawning season, are the many creeks and small streams flowing into the James River; the James River itself; the Chickahominy River; and Lake Chickahominy. As a matter of fact, most of the Tidewater area is good; and there is an especially good spot near Bermuda Hundred, where the carp are really big and hit readily. But wherever you fish for this particular scrapper, be sure to take along a lot of extra hooks and leaders because you may need them. Also, make sure to have a lot of backing on your fly rod reel; you'll need it, too, if you get a big one on. I can almost guarantee that after you've hooked, played, and landed a big carp on light tackle, you'll agree with me that the carp deserves the title of "the fresh-water bonefish."

## CONSERVATIONGRAM

Commission Activities and Late Wildlife News . . . At A Glance

**1066 DEER LOSSES RECORDED: VEHICLE COLLISIONS TOP LIST.** During 1963 at least 1066 Virginia deer met violent deaths from causes other than legal hunting. Vehicles were the greatest off-season killers, accounting for 726 or 68 per cent of the total. Dogs posed the next greatest threat, with 66 animals reported killed by these canine poachers. Game biologists estimate that this known loss is but a fraction of the total deer destroyed by man's domesticated predators. Forty-one deer were found illegally shot, the majority of these being does.

The months of October through January were the worst period with over half of the recorded mortalities occurring during these four months. This includes the rutting season, a period when deer seem to lose a lot of their natural caution. The worst month was November, in which the hunting season began.

Persons whose motor vehicles collide with a deer, killing it or severely injuring it, may retain the carcass for their own use provided it is reported and the proper forms filled out. If the animal is seriously injured it may be killed and carcass taken to the nearest game warden, trial justice or Justice of the Peace, or one of these officers summoned to the scene, and the proper forms witnessed to give the driver the carcass for his own use. No other tag or hunting license is required to transport or possess such an animal.

**HATCHERY FISHING OFFERED ANGLERS.** As part of a continuing research project on the effects of size limits on fishing, the Virginia Commission of Game and Inland Fisheries again opened eight of its Front Royal Hatchery ponds to public angling May 2. The public thoroughly enjoys the angling experience, and fishery technicians are gaining considerable insight into the effect of fishing on known fish populations from the records obtained.

Four of the ponds open to angling have a 14-inch minimum bass size limit while anglers fishing in the other four ponds may keep any size they catch. One additional pond containing largemouths and another containing smallmouths are open to "fish-for-fun" angling with anglers required to return all fish hooked. Regular creel limits and license requirements apply in addition to the special regulations mentioned.

Fishing hours at the hatchery located near Waterlick, Virginia, are 8 a.m. to 4 p.m. Tuesday through Friday, and 8 a.m. to 8 p.m. on Saturday. Sunday fishing is limited from 1 p.m. to 8 p.m. and the ponds are closed to all angling on Mondays. The hatchery ponds will remain open through September 6.

**BOAT REGISTRATION NOW GOOD FOR 3 YEARS FROM DATE OF ISSUE.** All Virginia boat registrations issued since December 31, 1963, will be good for three years from the month of issue. This is a result of modification in the Boating Safety Act made by the 1964 Virginia General Assembly. Registrations made between January 1, 1964, and April 1, 1964, will be recalled and re-issued. Boat owners in this group are urged to hold their certificate until they receive a temporary certificate for use while new certificates are prepared.

All registrations, renewals and transfers will be a straight five dollars and all will be good for three years. Under the old triennium system, registrations were pro-rated to four dollars in the second year and three dollars in the third because of the shorter period of validity. Nearly all Virginia boaters, in the future, will get more for their money under the new system since all registrations will be good for a full three years.

The staggered expirations which will result from this new system will allow the Commission of Game and Inland Fisheries to process applications faster and more efficiently. Once the majority of the boat registrations are spread over a 12 month period, renewals will come in at a regular rate instead of 45,000 during a three month period as happened at the beginning of this triennium. The revenue will also come in at a more regular rate allowing for more efficient budgeting and accounting.



C. G. and LOUISE B. HOLLAND  
*Charlottesville*

IT is a simple matter to set up a feeding station, especially with help from appropriate books and articles. Equally simple, with good descriptions and color pictures available, is an accurate identification of birds which visit the station after it is arranged. Presumably this is an end in itself: just feed them and watch them. We suppose most people let it go at this.

It seemed to us, however, the real fun of a station would be doing something with or about the birds who visited it. This is the story of a few things we did.

We live in Northerly on the northwest outskirts of Charlottesville. To our north is a four acre tract of tall oaks and pines with very little underbrush. On all other sides are houses, lawns and streets. Some homes have large trees in their yards; others have none. Two hundred yards south of us is a small stream bordered by much brush and 400 yards southwest is a tract of oaks. To the east is Route 29, a busy place for people and cars. There is only one other feeding station in our neighborhood and this is across the street, a hundred yards away.

Our feeding station is just outside the kitchen-dining room window. It has both differential and mobility. By differential we mean we have two wire baskets containing suet for those birds which prefer this food. Our main attraction is chicken "scratch" which we scatter on the ground. If it is snowing we try to throw it under a protective roof so it will not be lost in the snowfall. Finally, we have a plastic bleach bottle with a hole cut in the side two inches above the bottom in which we put sunflower seed.

# CHARLOTTESVILLE

By mobility we mean that in winter the plastic bottle hangs two feet from the window, the suet baskets are five feet away, and the "scratch" is thrown on the patio 10 to 15 feet from the window. In summer the plastic bottle and suet baskets go out to 20 feet and the "scratch" is thrown on the ground about 30 feet from the window.

Our reasoning behind this is as simple as the station. We wanted to appeal to the appetites of as many species of birds as we could, and we used scarcity of natural foods to bring them close for observation in winter. In summer we still wanted them to remember the station, and since we used the patio for lounging, we put the food far enough away so

	June			July			Aug 1-10
	1-10	11-20	21-30	1-10	11-20	21-31	
Brown Creeper							
Cardinal	5	7	4	5	6	3	6
Catbird	1			2	1		
Chickadee, black-capped	1	1	1	1	1		
Cowbird, brown-headed	3	2	2	4	2		
Dove, mourning	4	3	3	2	2	2	5
Finch, purple							
Flicker, yellow-shafted	1						
Grackle, purple	15	20	15	11	9	15	20
Hummingbird		1			1		
Jay, blue	4	3	3	3	6	3	4
Junco, slate-colored							
Kinglet, ruby-crowned							
Mockingbird		1		1	1	1	
Nuthatch, white-breasted	1	1	1	1	1	1	
Robin		1					
Sapsucker, yellow-bellied							
Shrike, loggerhead							
Sparrows, chipping	1	3	3	2			
fox							
house	3	2	4	6	5	5	11
song	1						
white-crowned							
white-throated							
Starling							
Titmouse, tufted	1	1	5	2	2	2	2
Thrasher, brown		1	1	1	2		
Thrush, wood	1			1			
Towhee, rufous-sided	2	1	1	1	1	1	1
Warbler, black-and-white							
Warbler, myrtle							
Woodpecker, downy	2	3	3	2	1	1	1
hairy				.			
pileated	1						
red-bellied					1	1	1
red-headed	2	2	1	2	2	2	2
Wren, carolina							
Wren, house							

Numbers of permanent residents underlined.  
Migratory species underlined and in parentheses.  
\* Died.

# WILDLIFE BIRD STUDY

that they would not be afraid to come in spite of our being on it.

Having set the stage, we got a notebook and each morning during breakfast, which lasted from 15 minutes to half an hour between seven and eight, we recorded the highest number of birds we saw, separately by species. Along with this we recorded their behavior and any special features such as juveniles, weather, presence of neighborhood cats, etc.: conditions which might influence their behavior. There were times when we recorded the number by species night and morning, and some special occasions when we recorded them almost hourly.

(Continued on page 19)



JWT

1962												1963															
September			October			November			December			January			February			March			April						
21-31	1-10	11-20	21-30	1-10	11-20	21-31	1-10	11-20	21-30	1-10	11-20	21-31	1-10	11-20	21-31	1-10	11-20	21-30	1-10	11-20	21-31	1-10	11-20	21-26			
6	6	6	6	5	3	4	15	7	14	14	13	9	11	8	9	10	10	8	7	7	5	5	5	4	4	5	
1	2	2	2	3	3	2	3	3	2	3	4	3	3	2	3	3	3	4	4	3	3	2	1	1	2		
3	4	5	10	10	20	20	22	15	17	12	6	8	19	4	7	6	9	5	4	4	2	3	3	2	1	2	
1	3	14	2	2	3	2	1			1			1	1	1	1	1	1	1	1	1	1	1	1	1	1	
3	3	14	2	6	6	40	1)												(7	56	16	12	12	16	18	14	19
1	3	1	3	2	1	2	3	4	3	2	4	2	2	2	3	4	4	2	2	10	5	1)	3	4	2	3	
1	2	2	2	2	2	2	1	3	1	1	1	1	1	2	2	2	1	2	2	1	1	1	1	1	1	1	
7	7	13	20	20	12	25	16	21	15	13	11	8	1	6	8	4	3	4	2	3	2	6	6	4	5	4	
2														3	2	1	1	2	2	1	2	1	1	1	1	1	1
1	1			(1	1	4	4	1	1	10	8	14	6	6	5	3	4	1	2	2							
2	3	2	2	2	2	2	3	4	4	5	6	5	5	5	3	4	1	2	2								
1	1																										
5	2	4	2	3	3	1	1																				
2	2	2	2	2	2	2	2	2	2	2	2	3	3	2	3	3	4	2	2	3	3	2	3	2	1	1	
3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	
3	2	3	1)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2
					1		1	1	2	1			1			1	1		1	1							



ALTHOUGH nothing takes the place of actual field shooting with your favorite rifle or handgun, there is now an interesting and safe method for the shooting enthusiast to get in a lot of off-season practice, indoors or out. And the shooting will do much to keep muscles and eyes in shooting trim the year around at a cost of only a fraction of a cent per shot.

The title of this piece might well be, "How To Succeed In Shooting Without Really Firing," because the guns described here require no powder or other so-called explosives. They are the relatively new and much improved gas-powered pistols and rifles, frequently called CO<sub>2</sub> guns. These arms are smokeless, nearly noiseless and very inexpensive to shoot. Their accuracy at short indoor and back-yard ranges is quite good enough to consistently hit a 1-inch diameter target at 15-feet distance. In fact one of my favorite targets is the little candy wafers, of about one-inch size, commonly called "Necco." The wafers are "bustable"; always a satisfactory sight to expert and tyro alike. Most shooters like to see something "give" when a well aimed shot finds its mark.

Recently I have had an opportunity to test several representative makes and models of "Cee-O-Two" guns. Some results of penetration and accuracy tests are shown in the illustrations. A close look at the penetration tests should convince any shooter that these guns are not, *repeat not*, toys. Their bite is sufficient to inflict a painful wound in the human body or to put out an eye! Head shots on small game, such as squirrels and rabbits, are usually fatal, and such birds as sparrows and starlings are sitting "ducks" for the pellet-firing gas guns. Grasshoppers and wasps and bumblebees are excellent and plentiful targets at ranges of 10 to 15 feet.

Top: Crosman Model 160 .22 cal. pellet rifle, target model, with sling, and rear sight adjustable for windage and elevation. Lower: Crosman Super BB repeater, level action.

Photo by the author



As with all guns, these too should be treated with respect and handled with care and safety.

There are two main categories of CO<sub>2</sub> pistols and rifles: those that fire lead or steel BB's and those that fire wasp-waisted, blunt-nosed, hollow-skirted, soft lead pellets. The latter are used in rifled barrels for greatest accuracy and greater energy than is developed by the light steel BB's. The guns come in two basic calibers: the .22 pellet and the .177, the latter being of the approximate diameter of a BB. Both are offered in handguns and rifle models by a number of manufacturers. Costs of the guns range from about \$39.00, for the Crosman Series 160 target rifle, to about \$16.00 for the Crosman 166 Super BB Repeater, a child's size carbine of very light weight and moderate accuracy. In between are excellent pistols in either single-shot or auto-loading models.

The fun and instruction that may be derived from these guns is almost endless. They are ideal for teaching youngsters, and other beginners, the fundamentals of shooting safety as well as putting them on the road to shooting enthusiasm and accuracy. In accuracy, all the guns tested are head and shoulders above the familiar, cheap, spring-air guns commonly given to the world's "Juniors" as a first gun. Not that the little spring-air jobs are not excellent beginners' weapons, but a youngster soon "graduates" to the



Crosman Model 600, .22 cal. 10 shot semi-automatic.

point where he can outshoot his gun and wants an arm that will "shoot where he looks." The gas guns admirably fill this gap between the first gun and the rimfire .22.

The gas-powered guns use as a propellant a small bottle of compressed carbon dioxide which is metered by the mechanism as individual charges for each shot. Each bottle will give from 35 to 90 shots, depending upon the make and model of gun. At about ten cents per bottle and pellets or BB's costing that fraction of a cent represented by four decimal places, you can readily see that an evening of fun is very cheap indeed.

My tests have shown that the pellets are capable of greater accuracy and have, on the whole, greater energy. The penetration tests show, however, that the BB's are comparable to pellets in paper-punching ability. This is because the harder steel BB's do not flatten to expend their energy within the target itself. The pellets may be compared to "mushrooming" sporting rifle bullets that *expand* to create a larger wound channel and to give greater knock-down power by *expending* all their energy within the target rather than "shooting clear through" the target, as some shooters are wont to brag of some sporting rifle bullets.

For indoor shooting a cardboard box, packed with cotton batting, rock wool, soft rags or cotton waste, makes an excel-

lent and safe backstop-target carrier. A thin steel plate, such as an old biscuit pan or a piece of roofing material, placed in the back of the box gives an added safety factor that is desirable after repeated shots near the same place have created an opening in the soft material. A box about two feet square is ample for stopping most shots, and putting the box into a fireplace opening or backing it up with a 3 x 4 foot piece of  $\frac{1}{2}$ -inch plywood makes a backstop that even the rankest tyro can't miss at usual distances of 10 to 25 feet.

Good target lighting is essential to good shooting. A shaded 100 watt lamp, set below or above the target carrier, or a lamp of the clip-on variety clamped to a mantelpiece or other support, works equally well. Just be sure that the target is evenly lighted without glare.

For the beginning shooter I prefer the single-shot guns. In rifles, the Crosman 160 or 167 are good choices. Both are the same except as to caliber, the latter being of .177. The smaller pellets seem to give a shade better accuracy, particularly at longer ranges like, say, out to 30 feet. The 157 single shot pistol is an excellent choice, too, and, in the auto-loading models, Crosman has an interesting and accurate .22 10-shot that handles and balances much like the Army .45 Auto M-1911.

The Daisy Model 200 BB Auto-loader incorporates a number of features that make it rate high in the safety scorings. This little pistol (it looks much like the Colt Woodsman) takes 175 BB's into its capacious "reservoir" at one gulp. These are transferred into the actual magazine, five at a time, by a simple shake of the gun with muzzle elevated and magazine follower held forward. Thus accidental loading of the magazine is eliminated. The follower interlocks with the trigger linkage, after the five rounds are fired, to prevent further discharge of the pistol or wasting gas by "pop-firing." Accuracy life of the CO<sub>2</sub> in this gun is greater than in the others tested, being about 80 shots from a single 12.5 gr. bottle (10¢) and, of course, the BB's are considerably cheaper to shoot than are the pellets.

All the guns tested have fully adjustable sights to allow zeroing the weapons for a given range or to compensate for individual characteristics of vision.

All in all, I have found my "gas gun arsenal" valuable,

For indoor shooting a cotton-filled pasteboard box placed in a fireplace serves as backstop and target carrier.  
Photo by the author



Author's daughter, Bettie, shows good shooting form with accurate, lightweight, .177 single shot hand gun.

not only for practice and in teaching shooting safety and marksmanship, but on many occasions they have proved to be the "life of the party" when friends gather at our house. Even the "girls" will leave the bridge table or gab-fest to take their turn at paper-punching or target-busting. It's a great way to stimulate shooting interest among the ladies, as well as male parents, some of whom seem to think that guns are good only for making frightening noises and for killing things—mainly people.

While most manufacturers supply interesting shooting-game targets such as checkers, tic-tac-toe, golf, and "hunting," we have devised a game that is a lot of fun for mixed groups of beginners and "experts." It makes use of the candy wafers mentioned previously:

With rubber cement, fasten three or four selected colors of the wafers on a sheet of black paper in such a manner as to form neat rows with the space of a wafer between adjacent ones. Alternate the colors so that similar colors do not appear

(Continued on next page)

Daisy Model 200 BB, semi-automatic fires five shots from magazine, loaded from 175 shot "reservoir" in rear of gun. CO<sub>2</sub> bottle fits into pistol's grip.



## Fishin' Holes (Continued from page 11)

fishing difficult. It can be done, though, and many pickerel have been subdued by expert fly fishermen. Played on a light fly rod he is truly a sporting fish.

The bait caster does not have the back cast problem created by the overhanging brush, but the catch here is the size of the lures required for effective casting. They're difficult to drop lightly into a quiet little pool.

My choice is the spinning outfit, although light spin casting tackle should work just as well. There is no back cast problem and the angler has a wide selection of lures to choose from.

Lurewise the pickerel is not "choosy." The red and white spoon is a longtime favorite and a strip of pork rind makes it almost irresistible. Spinner-fly combinations are also good with yellow or orange flies being the usual choice. Surface lures with propellers fore and aft that kick up a little spray can produce some good fishing and they add the bonus of the surface strike, one of the most exciting moments in fishing.

Many sportsmen wade these streams and this is the preferred method until you hit a good stretch of deep water, too deep to wade and probably inaccessible from shore. A small boat solves the deep water problem, but it's noisy and most Piedmont streams are in reality too small for floating. You seem to spend half of your time towing the boat through shallow water or lifting it over stream obstacles.

I have found a satisfactory compromise in the canvas covered automobile tube rigs that have become popular in recent years. They were designed primarily for fishing small lakes and ponds, but by combining one with a pair of chest waders you get a perfect outfit for Piedmont stream fishing.

You simply wade until the water gets too deep, and then you climb into the bubble harness and drift with the current—until your feet again touch solid bottom. My "bubble" has a snap pocket that is just right for sliding a small lure and tackle kit into—one that will hold all the tackle you

need for this type of fishing. It also has several tailored loops that are perfect for fastening a fish stringer to or for tying a sash cord to, with the other end around your waist so the rig will not float off while you are wading and concentrating on the fishing.

Another attribute of the hearty pickerel is the fact that he is a year 'round fish. He roams these Piedmont streams from January to December and if ice fishing were popular in Virginia, he would become the most likely candidate to be flipped through the ice fisherman's hole in the ice.

Small stream fishing does not seem to suffer from "dog days" doldrums as does so much of the fresh water fishing in Virginia and throughout the South. Some of my best pickerel catches have been made in August.

I have never found the pickerel a steady performer for night fishing. He feeds during the hours of daylight and in shaded streams seems to ignore the accepted formula for good fishing—early morning and late afternoon. Many times I have sacrificed several hours of precious sleep only to fish until mid-morning before getting any action.

The best part of Piedmont pickerel fishing is the solitude. I rarely encounter another fisherman.

The tiger of the weed beds is not "choosy," and seems to strike most lures more in indignation than from hunger.



## Gas Guns (Continued from previous page)

next to each other either vertically or horizontally. About 20 wafers in rows of five can be placed on a letter-size sheet. Each shooter picks his identifying color and fires, in turn, at his targets until each participant has fired a total of five shots. The shooter having the most broken targets at the end of the round is the winner; but other shooter's targets broken by an opponent count for the shooter whose target (color) is broken. Thus poorly aimed shots can run up the score for an opponent giving the tyro a chance against a more experienced "gun-slinger." This game can also be played on a partner basis with two shooters firing at one color.

Yes, gas gun shooting is real shooting fun, indoors or out, and you will be surprised at the ever-growing number of shooting enthusiasts that your indoor "party" shooting will create.

We in the shooting fraternity need more support to combat senseless laws that would take away our shooting privi-

leges; and the more people we can convert to the shooting sports, the more support we will have to combat these oftentimes silly proposals. As all shooters know, guns are not dangerous; the men behind them are the potential killers. So, whether you do your plinking in the parlor, playroom or patio, *always* handle your guns safely and require others to do so as well.

NOTE: Jim Rutherford is a member of the National Rifle Association, to whose magazine, *The American Rifleman*, he has contributed several articles. He is a NRA certificated Hunter Safety Course Instructor and has assisted in the training of more than 100 youngsters in shooting safety through courses sponsored by the Commission, the Radford Izaak Walton League Chapter and the NRA. He is a member of the Christiansburg (Va.) Rifle Club.

Our theory behind this activity was twofold. One was that the birds of the immediate neighborhood would be drawn to the feeding area as a popular spot to eat. Secondly, the highest number of birds we counted over a period of days would, on the average, be representative of the population for each species in question. While workable, both of these propositions have flaws in them, of which we cite two examples.

In winter, when food was scarce and the birds bolder, we trapped the tufted titmice and black-capped chickadees as they came singly to eat in the bleach bottle sunflower feeder. In order to get a seed each bird would have to enter the bottle, at which time we pulled a plastic sheet over the entrance. The bird was removed and an aluminum band was placed on its right leg in the winter of 1962-63, and one was placed on each leg in the winter of 1963-64. Between December 25, 1962, and January 10, 1963, the highest number of titmice recorded was 6, while the number of bandings was 10. In the winter of 1963-64, between November 16, 1963, and December 5, 1964, the highest number of titmice recorded was 5, including the ones already banded; but we banded 7 others. For the same respective periods of time the highest chickadee count was 3 and we banded 7; then counted 2 and banded none.

The second observation has to do with mourning doves. We found that if we arose before daylight in winter and counted the greatest number to appear just when there was enough light to see outside, there would be 30 or more. By the time there was good light outside this flock would have disappeared and our counts dropped to zero or as high as 16.

In spite of these observational limitations, as well as others which will occur to anyone who contemplates the situation, we have presented our results in tabular form. Species are listed alphabetically. The numbers shown represent the largest number of individuals of each species observed simultaneously at the feeding station during each 10-day interval beginning June 1, 1962, and ending May 26, 1963. To bring out those elements which we will discuss later we have underlined the counts of permanent residents and have both underlined and put in parentheses the members of the migratory populations for this same purpose.

What our chart shows is undoubtedly "old hat" to ornithologists. Some of it was new to us, probably because we have not read ornithological literature extensively; and it may be new to readers of *VIRGINIA WILDLIFE* for the same reason. At the risk of being entirely wrong we would like to make some comments about the bird population figures as they appear on the chart. These comments are by way of explanation, as we see it, for some of the rises and falls in population, or total absences of some species at various times of the year.

The permanent residents, just like the migratory birds, divide the year into two parts: the cold and the hot season. It will be noticed among the permanent residents (cardinals, chickadees, mourning doves, house sparrows, starlings and possibly the downy woodpecker) that during the cold period there was a gradual rise and fall in number at the feeding station. The increase, beginning in late September and continuing through October, is partly related to the addition of juveniles as our notes reflect many of these during this period. In addition, there seems to be a collecting of adults, which were dispersed through the breeding season, into

the flock. During the winter these remain together but by late January and early February a dispersal takes place with the counts falling to a basal "hot season" level. This fall in total count reflects the dispersal to breeding areas beyond the range of our feeding station. As illustrations of this, note the fluctuations in the cardinals and house sparrows.

The absence of starlings during the summer, their gradual increase and then decline to disappearance, their ubiquitousness throughout the neighborhood at all times, posed a different problem and a different solution. We had anticipated continued visits throughout the year, either singly or in groups, from these birds. The only explanation we can offer for the findings on the chart is that as natural food became more scarce during the winter they began to range farther and in increasing numbers, discovering the feeding station and using it. As natural foods became more plentiful, a reversal of the process occurred. If there is another, more adequate explanation we would appreciate someone telling us what it is.

Among the winter residents only the junco and white-throated sparrows were numerous enough to delineate some pattern. Both show a gradual increase and an equally gradual decline in number; both reach a maximum in late January and early February. Both begin to arrive in mid-October and depart by late April and early May. These two strikingly similar patterns posed the question of mutual influences from dynamic forces, or an interrelatedness of the two species in some other fashion. The gradual build-up and decline suggests that individuals of the two species move as isolated units both from and to the north, collecting into flocks when they have settled on the winter feeding grounds.

The summer residents arrive and depart on schedule. In contrast to the gradual build-up of the flocks of juncos and whitethroats, purple grackle go and come as a single large unit. It will be seen that 40 were on the feeding station just before they disappeared in late October, and 56 were counted at one time when they arrived in mid-March. During the summer, between these two extreme counts, they thin out, the group remaining in our neighborhood varying between 2 and 20. We also did not notice a large increase in their number with the addition of juveniles, although these were seen.

The red-headed woodpeckers which visited our station were migratory. When in our neighborhood they made themselves known by fighting and making a great deal of noise. We had observed another redhead, in another section of Charlottesville, in dead winter, and have supposed him to be a permanent resident. This dichotomy of migration and residence is probably understood by ornithologists, but our reading has not been so great that we can offer an explanation.

More information can be extracted from the chart for discussion, but it has been left for your inspection and analysis. We have found this phase of our study of birds much more rewarding than just feeding them and watching them. Anyone can do it if he has a little persistence. Our persistence is such that this is our third year of keeping these records. We anticipate, as years pass, and the character of our neighborhood changes by the large amount of building which is taking place, that the patterns of bird populations will change in accommodation to this. We look forward to seeing if this is true.

today centers around improvement of habitat for desired species, and control of hunting and fishing pressure so that only the annual surplus of each species will be harvested.

Habitat manipulation, of course, is no easy, one-shot panacea; and we finally have come to this as the real management tool because we have learned that *there is no simple panacea*. I have tried to show that man has been manipulating wildlife habitat ever since our ancestors came to these shores. Mostly this manipulation of the environment has been done without regard to its impact on wildlife, and sometimes wildlife has accidentally benefited and sometimes it has not. Historically, it has been a hit-and-miss pattern. Now we are in the process of incorporating a recognition of wildlife values in land management practices, both in agriculture and forestry.

In employing our other main management tool—the control of hunting and fishing pressure to get the most out of our fish and game resources—we find ourselves dealing more with people than with wildlife and its environment. And this is as it should be, because after all we are in the business of managing the wildlife resource not for its own sake but for people. However, I must confess that wildlife and its environment sometimes are easier to manipulate than are people. Human behavior is less predictable than that of a bobwhite, and there are many prejudices and traditions that complicate the process of controlling, regulating and shifting hunting and fishing pressure to keep up with ever-changing wildlife population patterns.

To obtain the maximum harvest, each species of game theoretically should have its own season, bag limit and hunting regulations. As we take steps in this direction, the public rebels because regulations become increasingly complicated.

Word gets around that hunter success has been particularly good on one public shooting area; and suddenly hunters descend upon it like an unpredictable swarm of locusts, spill over onto surrounding private lands, create traffic jams on the back roads, and get the residents of a whole county or two up in arms, to say nothing of harvesting considerably more game from this particular locality than we had intended.

Sometimes good game management demands a reduction in overly dense deer herds by the harvest of some anterless deer, and a lot of people just do not think it is right to kill does.

Right now it is essential that we relieve hunting pressure on hen turkeys by shifting some of that pressure to gobblers, which can be hunted selectively only in the spring. And we find a lot of people who just do not believe in hunting turkeys or anything else in the springtime.

In spite of the fact that we have plenty of problems to keep us occupied, generally speaking we here in Virginia are in pretty good shape game-wise. We have killed over 38,000 deer in each of the past two seasons, the highest numbers in our history. West of the Blue Ridge much of our timber is heading toward maturity and some decline in present deer herds is to be expected. In this section our deer population will be limited by the amount of habitat we can maintain through planned timber sales, timber stand improvement and other forest management measures. In the eastern half of the state our overall deer population is at high level. The reversion of farmland to forest, the popu-

larity of pulpwood production, and other factors have produced a maximum of brushy deer range. Deer numbers should remain high in this section until land-use trends head in a less favorable direction. There is no reason why we cannot have plenty of deer and deer hunting in Virginia indefinitely, if the public will accept and support the kind of regulations that good management dictates.

Bear numbers have fluctuated quite a bit in recent years and now appear to be at a peak, judging by the record kill of 381 turned in last season. Bears tend to benefit from the same habitat changes which benefit deer, and with our vast acreage of National Forest lands we should have bears in hunttable numbers for many years to come, but probably with less liberal hunting regulations in the future than we have today.

Turkeys have been adversely affected by the same forestry practices which have benefited deer. In the west and north, turkeys are doing well and are even increasing in some sections as more timber matures. In the piedmont and tide-water sections, pulpwood forestry has been working against the turkeys. Three successive nesting failures have reduced the population in this section and necessitated restrictive seasons. The long-range outlook for the wild turkey and for more liberal turkey hunting regulations in eastern Virginia is not good.

Quail have not fared very well on the modern Virginia



Commission photo by Kesteloo  
The Commission's deer stocking program succeeded in establishing herds in suitable habitat where all native breeding stock had been exterminated years before.

scene. Being very dependent on agriculture for optimum habitat—and an outmoded, primitive type of agriculture at that—they thrived in the days of numerous farms, large plantations and inefficient agricultural practices. The clean farming of today, the trend toward larger farms and away from grain production, and the general abandonment of farmland for pulp or timber production has considerably reduced our quail range. Some of the soil conservation programs now being advocated for retired cropland are beneficial to quail and other small game, and planting materials distributed by the Commission help to increase the carrying capacity of our present quail range.

The mourning dove, on the other hand, has been on the increase. Current changes in land use have favored this adaptable and prolific bird and it can probably provide even more recreation in the future than it does now. Management procedures which concentrate these birds for more efficient harvest have been quite successful in other states and are being tried experimentally in Virginia. With an eye to the future, we have stepped up our banding and research to learn more of the bird and its habits in Virginia.

Rabbits have had it pretty rough in some parts of the Old Dominion during the past few years. Mysterious population

drops have been common and sometimes widespread. Investigations have not yet revealed if tularemia or other diseases are responsible. Rabbits are prolific breeders, but are subject to a wide array of natural population controls which limit their numbers. The rabbit picture is not all gloomy, and fine cottontail hunting is still enjoyed in many parts of the state.

Squirrels are very adaptable and consequently are generally abundant throughout the state. Their year-to-year abundance depends on the highly variable mast crop. The increase in forested acreage throughout the state should favor the squirrel in years to come.

Grouse numbers vary considerably from year to year due to cyclic population phenomena. Grouse are generally abundant in the mountainous parts of the state during good years. They tend to benefit from the new growth stimulated by timber sales and habitat improvement work, much as deer respond to the same improvements.

Pollution control efforts during the past several years are making headway on some of our streams. Fishing has been restored in some sections, improved in others, and better control over accidental discharges of toxic substances has been achieved. This is a continuing problem, however, that needs the attention and interest of every responsible citizen.

The Commission's lake construction program has increased the fishing opportunity in many sections. The big



Commission photo by Kesteloo

The use of game farm stock to augment the natural productivity of species in hunting areas has been discarded as a useless and wasteful game management tool.

boom in farm pond construction during the past decade has added a lot to our fresh water fishing. More significant from the point of view of the general public have been the large new reservoirs constructed in southern Virginia. Their fishing and recreation potential is enormous, and by controlling water flow they have sometimes improved downstream fishing where flooding and heavy silt loads had been a problem. In addition, these large, deep impoundments have created an entirely new type of aquatic habitat that did not exist naturally in Virginia, and we hope to be able to develop from it a new lake-type sport fishery. To this end we are experimenting with introduction of such exotic species as northern pike, muskellunge, and lake trout.

So much for past and present; now what of the future? Each year the number of hunters and fishermen in Virginia increases by 3 or 4 percent. Our existing public hunting and fishing areas already are overtaxed in the eastern part of the state. Great population increases are forecast for this section and the general recreation demand is expected to double in the next 40 years. The Commission is aggressively seeking suitable lands to meet this need. Since large tracts of land in this section are difficult to find and prohibitive in cost, our new Powhatan area just outside of Richmond was purchased

as an experiment to see if a number of smaller areas could provide the same hunting as a few large ones, at less cost and with greater accessibility.

To make up for some of the inevitable losses in native game species caused by man's widespread manipulation of the face of the earth, species from other parts of the country and the world are being sought to fill the gaps. Muskellunge, northern pike, and lake trout from the northern states have been experimentally released in some of Virginia's large reservoirs. Black-necked pheasants from Iran hybridized with ringnecks from California seem to be taking hold in counties along the lower James River. Kalij pheasants from the Himalayan Mountains have been released in southwestern Virginia. Green pheasants and black francolins have been released in a number of experimental areas in the state. If some of these exotic birds succeed in filling the niches for which they were scientifically selected, we can look forward to a richer and more varied fauna for future sportsmen to enjoy.

It is difficult to visualize the effects that our declining agriculture, our expanding industry, and our sprawling metropolitan areas will have on wildlife habitat and hunting and fishing pressure. If the three day work week and high pay scales predicted by some materialize, hunting and fishing and other forms of outdoor recreation are destined to play a far more important role in our lives than they do now.

In the field of hunting and fishing, as in most other forms of outdoor recreation, we are going to have to accept more crowding, more regimentation, and more rules and regulations to implement the carefully planned multiple uses of our outdoor areas as our population pushes toward the 300 million mark expected by the year 2000. We will also have to modify our concepts of what constitutes success in these sports. For a long time, the food value of the game and fish taken has been unimportant from an economic standpoint, but the full creel or game bag has remained a symbol of success. As the number of participants increases, the sport, the fun, the enjoyment of hunting and fishing, will become the true measure of success. Methods that give the game a better break will be favored over wholesale slaughter.

The Game Commission has already taken several steps in this direction and more are sure to follow. The fish-for-fun concept tried experimentally on the Rapidan River has been an unquestioned success. Here anglers are able to take good sized rainbow and native brook trout on barbless hooks and release them unharmed for the next angler.

The 30 day archery season granted for the first time last year provided thousands of hours of recreation for an estimated 5,000 Virginians who harvested only about 250 deer. The spring turkey gobblers season promoted by the Game Commission for the past several years fits into the same category. This season provides thousands of hours of high quality recreation at the expense of only about 285 turkeys, and these are old, excess toms whose removal does not affect one way or another the year's production of young turkeys. The "recreation per animal" value of such innovations is obvious in light of our total kill of 38,000 deer and 1811 turkeys (about half of which were hens) during our last regular fall season. We still hope to maintain "quantity" hunting and fishing for many years to come, but we are going to have to upgrade the quality aspects all the while if there is to continue to be enough to go around.

to overcome the resistance of normal attrition factors and again bring the rabbit back to what we rabbit hunters like to think of as "normal" abundance. And when this does happen, the ecological balance between the rabbit and his total environment is once again so finely drawn, and so precarious, that as we rejoice in the "recovery" the rabbit population already is ripe for another "boom and bust."

Thus, strange as it may seem, the rabbit's main defense against extinction, his birth rate, not only plays a role in his periodic abundance but may also be indirectly responsible for his periodic scarcity.

There are things that can be done to help produce more rabbits on the land when the population is not already at or approaching peak abundance. There also are a lot of things that either cannot be done effectively, or that will not have the desired results even if they are attempted.

Restocking, for example, is a costly and useless tool in rabbit management. The rabbits already there will do all the "restocking" that is needed, and then some, even in periods of scarcity.

We cannot wage war directly against parasites and diseases, even though these silent killers may be the final, drastic control imposed upon rabbit abundance. The wild animal without parasites and incipient disease does not exist. Killers such as tularemia usually reach epizootic proportions and reduce populations only after high densities have been reached. Predation and hunting pressure *may help* prevent serious outbreaks of disease, by leveling off the rabbit population at a safe density; but there is no other practical and effective means of combating rabbit disease in a wild population.

Drastic restriction of fall rabbit hunting has little effect in increasing the following season's productivity. The number of rabbits taken through normal hunting pressure is never great compared to the normal total annual population turn-over, and in most cases fall hunting merely helps bring populations down to the numbers that can escape natural mortality factors when winter's low point in the land's carrying capacity is reached. A study recently completed by graduate student Neil Payne of the Virginia Cooperative Wildlife Research Unit showed that rabbits on the Commission's Hog Island waterfowl refuge could withstand a reduction by hunting of at least 75 per cent from their fall level, and still there would remain ample breeding stock to produce a comparable harvest the following year. This study further suggested that a hunting pressure reduction of 75 per cent of the early fall population is unlikely to occur where good rabbit cover exists, because hunting success becomes so poor as the 75 per cent removal is approached that most rabbit hunters become discouraged and give up or go elsewhere to hunt.

But just what is "good" rabbit cover? When hunters cannot find plenty of rabbits even *early* in the fall, it usually is because they cannot find the right kind of places in which to hunt them. The rabbit hunter who has had little success in the woods, and even less in fields of stubble and clover, may wonder why he cannot at least find some game in those big old abandoned fields that have grown up into almost impenetrable thickets of blackberry bushes and scrub pines. Now if he looks for substantial amounts of "edge," where all these cover types come together, and cannot find it, that is surely one good answer to his rabbit problem.

The main thing that *can* be done to increase the supply of rabbits in the fall is to provide more of the right kinds of vegetative cover in the right places, and thus both increase and *extend* the amount of *complete* habitat available. Rabbits need places to eat, to hide, and to raise their young. A contented rabbit is one that never has to go far from any one of these places to find the others. There is nothing fancy about the cover requirements, but interspersion of cover types—of feeding and playing areas with brushy escape cover—is the key to successful rabbit management.

Give them a large block of heavy, brushy cover adjacent to a large field of clover, and all the rabbits in the area will be found concentrated along the edge between the two. A few rods back in the brush, or a short distance out into the field, the land supports no rabbits at all. Along the narrow marginal strip, the rabbit population of the whole area lives in a highly vulnerable local concentration.

Interspersion of cover types, with lots of edge between the two, provides for a safe dispersal of an abundant rabbit supply that the land can sustain—not one that is seen concentrated along the sides of roads and edges of fields in summer and is sought in vain when the fall hunting season approaches.

Where dense cover already exists in large, unbroken blocks, its value as cottontail habitat can be greatly increased by clearing lanes through it and planting them to grasses and clover. The quickest way to bring on a rabbit increase in many places, however, is simply to build brush piles—big ones—near dependable sources of food. Cutover lands, where there are sprouting stumps and shrub growth coming on, are ideal locations for the quick cover provided by the right kind of brush piles. (So are the edges of croplands and orchards, where brush piled up in long rows often creates a veritable "rabbit heaven," but of course an invitation to a rabbit to live there is also an invitation to do some feeding on the crop.)

Brushpiles around the edges of pastures can be productive, if some of the adjoining open land is fenced against grazing. Isolated brushpiles out in the middle of big pastures are much less attractive.

Little, skimpy piles of brush are not of much value. They should be several yards in diameter, and five or six feet high. Beyond that size, though, it is better to move on a short distance and start a new one. Remember, interspersion, not solid blocks of cover, is the key.

Properly located and well built brushpiles are a quick acting management tool, and a first step toward an even greater and more permanent improvement in range carrying capacity. Build them near fencerows, ditches, streams and woodlot edges where there already is a merging of other cover types. Let grasses, clover and weeds grow *around* them. Let blackberry bushes and other shrubby plants grow up *through* them. Help nature convert them into the permanently rooted, living thickets that rabbits love.

You still may see some fluctuations in rabbit abundance, because the balance between the rabbit and his total environment is naturally dynamic rather than stable. But *your* rabbits will always bounce back quicker from any temporary slump they might encounter if the carrying capacity of *your* hunting grounds is improved. It is the best thing that could possibly happen to the rabbit, and the kind of thing that has not been happening often enough of late.

*Bird  
of the  
Month:*

## *Black-and-White Warbler*



By J. J. MURRAY  
*Lexington*

OUR warblers have a wide choice for the location of their nests. Some species build on the ground, some in low thickets, others up to 50 feet high in trees. The black-and-white warbler is a ground nester. It rarely feeds on the ground, however, foraging mainly on the trunks and large branches of trees. For this reason early American ornithologists called it the "black and white creeper."

The nest is placed near the base of a tree. One that I saw in Rockbridge County many years ago was at the foot of a clump of hickory saplings. It was hollowed out under dry leaves, with the nest roofed over and visible only from one direction. The brooding bird and the five eggs almost filled the nest saucer. The eggs were white with reddish spots and, as is so often the case, were more heavily marked at the larger end.

The nesting bird let me put my face within 18 inches of her before she moved. In fact, I could easily have caught her. When she did flush she pulled a wing down, fluttering about as if crippled. Running about 10 feet, she returned with a feeble cry, again coming within 18 inches of my hand and fluttering about me until I left her in peace.

This nest had five eggs on the last day of May. It may have been a second attempt after the failure of the first, as eggs have been found in this same region in late April. The April date is quite early, of course, as even in Tidewater Harold Bailey listed fresh eggs only from May 15 to 20.

The courtship of the black-and-white warbler is very interesting. The male sometimes chases the female in and out among the bushes at such speed that it is difficult for the eye to follow them. Sometimes the pursuit takes place on the trunk of a tree, where round and round they go. In pauses between these rushes the male will hang to the bark, holding his body as far away from the trunk of the tree as possible and bending his head over until it almost touches his back. Evidently this queer posture impresses a female even as do some of the equally queer antics of the human male.

Many birds seem to have a marked sense of curiosity. Indian hunters on the prairie used to play on this sense of curiosity to lure large birds to their destruction. In the little black-and-white warbler this curiosity is developed in a high degree. I have found that when in the woods I approach a fledgling of any species one of these warblers will soon join the parents in their protests at my presence.

The name of this bird describes it. The male is almost unique among warblers in having no touch of color anywhere. The upper parts are mainly black, with white streaks, while the under parts are just the reverse, mainly white but marked with black stripes. The female is duller, with a slight wash of brownish on the sides. These insect-eating birds are entirely beneficial in their feeding habits.



Edited by HARRY GILLAM

#### Campers' Guide

*Camping Maps U. S. A.*, by Glenn and Dale Rhodes, illustrated with thumbnail sketches and state outline highway maps, is a handy book for all campers. Just the right size to fit into an automobile glove compartment, it is an easy-to-use manual of how and where to camp in each of the 50 states. More than 10,000 camp grounds are included, and name, location, nearby highways, and facilities are listed for each, state by state. Each camp ground also is identified by number, cross-referenced with the text, and its approximate location is shown on the accompanying outline highway map.

Opening sections of the paperback contain helpful tips on shelter, cooking, attire, packing, setting up camp, food and food preparation, safety and health, motor hints, and check lists for food and equipment. Information on charges, if any, and other special considerations and regulations concerning camp grounds in each state is presented at the beginning of each state section.

The 297 page paper-backed book is published by the Macmillan Company, 60 Fifth Avenue, New York 11, New York; 1963. Price \$2.95.

#### Chickahominy Rock



This 11 pound 4 ounce citation rockfish was taken from the Chickahominy River by P. T. Sansone of Richmond. The big rock was weighed in at Ed Allen's Camp #2. Sansone took several citation-size largemouths from the Chickahominy in 1963.

#### Whopper Bream



Photo by Wayne Dandridge

This 2 pound 2 ounce citation size bluegill was taken by Gene Goodman of Chesapeake, Virginia, this spring. He caught the king-size panfish while fishing with worms in a private pond.

#### Sportsmen Clear Way For Trout

This spring a combined snow slide and drift up to 9 feet deep blocked trout stocking crews on the St. Mary's River. Two Augusta County sportsmen's clubs came to the rescue, the Blue Ridge Bear and Coon Club furnishing a bulldozer to clear the snow and the Riverheads Coon and Bear Club furnishing a labor force to cut brush and restore the road to its former condition. Game Warden Houston I. Todd, who meets regularly with these groups, reports them extremely cooperative.

#### "No Deer"

Many hunters erroneously conclude that "there isn't any game left," simply because they don't see it on frequent trips afield. In Michigan, 39 deer were fenced into a mile-square area of hardwoods, pine swamps and open pine barrens. In clear weather, with ideal snow-tracking conditions, it took six experienced hunters almost four days before they saw a buck. The average time spent bagging a buck within the enclosure was 51 hours.

#### Outdoor Recreation Assistance Book Offered:

Description of help available to states, their subdivisions, organizations, and individuals is provided in a useful new booklet, *Federal Assistance in Outdoor Recreation*. Copies are on sale at 20 cents each from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

Assistance available under authorized federal programs involves credit, cost sharing, technical aid, educational services, and research. It may be obtained in a variety of ways for a variety of purposes under the regular program activities of five federal departments and four special agencies or administrations.

A concise and useful reference booklet, *Federal Assistance in Outdoor Recreation* does not attempt to sell outdoor recreation or agency programs. Instead, it gives brief descriptions of authorized programs, ways in which assistance is provided, and the address of agency contact offices.

#### Massaponax Bigmouth



A blue plastic worm proved to be the downfall of this 10 pound largemouth taken by Lou DePalma of Stafford, Virginia, in Massaponax Creek near Fredericksburg. The fish was brought to net on 6 pound line.

Hunters and fishermen are permitted to camp free on 6 Wildlife Management Areas owned by the Commission of Game and Inland Fisheries. Camping is provided on one additional Commission owned area for a moderate fee.



Edited by DOROTHY ALLEN

### Wildlife Food Plots



The Fredericksburg-Rappahannock Chapter of the Izaak Walton League sponsored a wildlife food patch contest in the three nearby counties of Spotsylvania, Stafford, and Caroline. FFA and 4-H Club members worked hard to raise a fruitful plot of wildlife food to improve game populations.

The chapter furnished the seed (provided by the Commission of Game and Inland Fisheries) to be used and a set of rules to guide the contestants. Judging was done by Game Commission personnel, county agent, and members of the chapter's committee on conservation. Prizes totaling \$200 were awarded the winners at a special meeting at the chapter's clubhouse.

Dr. Robert Caverlee, a retired Baptist minister, talked on "A Seed is Planted" both in the ground and in the boy. Mr. Stuart Purks, Assistant Chief of Law Enforcement Division of the Game Commission, was assisted by Wardens Roland Eagar and Francis Boggs, and by Darrell Ferrell, Coordinator of the Game Commission's Field Educational Services, in presenting the following awards:

#### Stafford County:

- 1st Place—\$25.00—Michael Clark
- 2nd Place—\$15.00—Clay Kendall
- 3rd Place—\$10.00—Roger Randall

#### Spotsylvania County:

- 1st Place—\$25.00—Randall Mastin
- 2nd Place—\$15.00—Larry Mastin
- 3rd Place—\$10.00—Wendall Green

#### Caroline County:

- Caroline High School—
- 1st Place—\$25.00—Billy Cecil
- 2nd Place—\$15.00—James Skinner
- 3rd Place—\$10.00—Tommy Loving
- C. T. Smith High School—
- 1st Place—\$25.00—Bobby Blanton
- 2nd Place—\$15.00—David Collier
- 3rd Place—\$10.00—Fred Simulick

### Youth Gives Game Warden Bad Moment

A young lad near Watertown, S. D., gave a state game warden a few bad moments—but everything turned out okay:

A warden driving along Big Sioux Creek noticed the end of a brand new fishing pole sticking up over the top of a knoll. The fishing season was still closed there, so he stopped to check.

He was somewhat surprised to discover a little boy dangling a line in the water.

"I didn't want to bawl him out and he was too young to arrest, so I asked him how the fish were biting in the hope that I could come up with an idea on how to handle a situation like this," the warden explained.

"Oh, I'm not fishing," said the lad. "I just wanted to try out my new fishing pole but Dad wouldn't let me have any hooks yet."

### Nature Camp

The following essay was written by a student attending the third session of Nature Camp 1963:

#### First Place Essay

This nice, warm, and friendly camp is nestled between mountains, rivers, homes of wildlife and many things of nature.

The two weeks I've been here I feel as though I have been drawn closer to God and His works of nature. Being away from civilization for a while really lets you know what is in this wonderful world of His.

I have watched other campers scurry after a butterfly, tear an old log apart, go to the nice swimming pool. They like the opportunity to be near God and show interest in His creations.

Nature Camp isn't all fun and no work, but a combination of both put together marvelously by the staff. You learn what kind of softie you really are on those hikes up and down the mountain. At Table Rock, you may have a geology class and still be able to go

down the slide carved out of rock by water. This is one deed of Mother Nature.

The name of the camp is so perfectly fitting. Nature, that's a nice word and I really wonder what it means. Does it mean bugs, snakes, birds, bears, rocks, wildflowers, and such. I guess it's that and much more—all of God's creations.

Why are the people so nice? A question I keep asking myself. I just thought of an answer. It isn't because they are pretending so there'll be no bad report; it's because they really are friendly and willing to help you at any time.

Keeping a notebook helps you remember what you learned, and as you grow older, you may look at it and cherish the things in that green book. You'll recall the fun, work, people, classes and everything.

I'm sure you'll want to come as long as you are able. These past two weeks have been one of really living in a world revealing the things that went by unnoticed before. Every camper should have a warm place in their heart for this camp.

To me there's no place on earth quite like it. The camp is rustic in a sense and original in another.

I'll try my best to come back every year to the camp nestled in the mountains, Nature Camp Virginia.

Mary T. Graves



# ON THE WATERFRONT



Edited by JIM KERRICK

## National Safe Boating Week

National Safe Boating Week has been scheduled for the period of June 28, 1964, to July 4, 1964. Encouraged by a heartening amount of interest in safe boating activities on the local level during 1963, the National Safe Boating Week committee began its promotional program earlier this year; and visual and instructional materials for the 1964 campaign have been distributed to marinas and safety organizations.

## Recreational Boating Safety

The Virginia waters of the Chesapeake are efficiently supervised by the Coast Guard, Game Commission, Coast Guard Auxiliary, Power Squadron, and no doubt other agencies and organizations. They are superbly marked, lighted, and buoyed. Excellent charts are available at prices all can afford. Inexpensive portable radios reach marine and air weather reports on several frequencies, hourly up to continuously. Ship-to-shore, or much cheaper Citizens' Band, radio-telephones provide ready communication and prompt assistance. Hulls, engines, and gear are far more efficient, reliable, safe, and inexpensive than was the case 40-odd years ago when I started boating. Detailed data on rules of the road and specific safety recommendations are available in overwhelming volume from an enormous range of sources.

The only area of marine safety not as yet covered is the mental attitude of the novice or semi-experienced operator.

Somehow he must be persuaded to take advantage of the abundant safety facilities and information available. He must be made to realize that boating is a serious way of life, not a casual way to kill time, involving great potential hazards; and he must be induced to take steps to protect his party and himself from those hazards.

A difficulty is the application afloat

of shore acquired patterns of behavior. Almost everyone drives an automobile today, and must drive reasonably well to survive. Many runabouts have cockpit arrangements deliberately designed to imitate a car interior. Ashore, 35 m.p.h. is a moderate, cautious speed. Placed in a "driver's seat" afloat, will the inexperienced boat owner realize 35 m.p.h. on the water is a speed that often invites disaster? That he has no power brakes?

To drive a car, or pilot a plane, the landsman expects to take a test, and be licensed. The absence of such requirements on the water must create the thinking that if you don't have to have a license, there can't be anything to it; while the facts are it is impossible to devise one test properly evaluating ability to handle such vessels as, say, a 48 cu. in. racing hydroplane, a conventional O.B. runabout, a heavy displacement 60 ft. cruiser, and an 80 ft. schooner drawing 10 ft. of water. The master of each is confronted by very different, but very compelling, problems.

The boating safety problem appears to lie in the attitude of the operator towards the sport. This puts the matter in the area of human nature, and psychology, and thus makes the solution, whatever it may be, both complex and obscure.

Personally, after 44 years afloat, I operate my boats on the basis of Murphy's Law. That law is: IF THINGS CAN GO WRONG, THEY WILL. (*The Scout's Motto is: BE PREPARED.—Ed.*)

—Gale Richmond  
Staunton

## Are You Covered?

If you look closely at your marine insurance policy, you will probably find that you have agreed to haul your boat out by a given date. If your boat is still afloat and you have passed your deadline, call your broker immediately to extend your in-the-water provision. If

you fail to do this and your boat suffers damage, the policy violation will not permit you to recover. The courts construe your lay-up warranty strictly.

—*Motor Boating*, November 1963

## Kold Metal Now Available In Liquid Coating Consistency

Jessop's revolutionary new Kold Metal containing Loxalloy is now available in liquid coating consistency for marine application. It has the same properties as paste consistency Kold Metal, but in the liquid form may be sprayed or brushed on metal, wood or concrete. No special tools are required as it may be applied with conventional spray equipment.

Kold Metal provides an ideal protective coating for boats, barges, yachts and dredges, and is an excellent base for anti-fouling coats. It has superior chemical resistance and protects against salt water and sea air corrosion. It waterproofs, rustproofs and seals. It can be power sanded, buffed, filed and painted. It is a non-conductor of electricity and is not affected by mild acids, gasoline, oil or petroleum solvents. It has superior drying qualities, allowing speedy application and heavy coating if desired.

For further information contact your local marine dealer or write directly to the Virginia Commission of Game and Inland Fisheries.

## Unsafe Ejection

A 14 foot boat propelled by an 80 horsepower outboard motor was proceeding at full speed, driver's vision obscured by two passengers sitting on the bow of the boat with their backs resting against the windshield. The boat struck a buoy and the two passengers were ejected into the water. One died from loss of blood when slashed by the propeller of this 80 horsepower launcher of living projectiles.

# It's the Law!

Every motorboat of 10 horsepower or more must be registered with the Commission of Game and Inland Fisheries.

This Certificate of Number must be carried on board whenever the boat is operated.

COMMONWEALTH OF VIRGINIA  
COMMISSION OF GAME AND INLAND FISHERIES  
CERTIFICATE OF NUMBER

THIS IS TO CERTIFY THAT IN ACCORDANCE WITH THE VIRGINIA MOTORBOAT ACT AND REGULATIONS PUBLISHED PURSUANT THERETO, THE NUMBER BELOW HAS BEEN ASSIGNED TO THE VESSEL DESCRIBED HEREIN

*Chester F. Phelps*  
CHESTER F. PHLEPS, EXECUTIVE DIRECTOR  
COMMISSION OF GAME AND INLAND FISHERIES

REGISTRATION NUMBER  
VA 0000 Z

YOUR NAME  
MAIN STREET  
ANYWHERE, VA.

38 US	MADE OF BOAT AND PRESENT NO. (IF ANY)
CHRIS CRAFT	
16'	W
LENGTH	OB
	GAS
	PLEAS
	FUEL USE

NOTIFICATION OF CHANGE IN STATUS OF A NUMBERED VESSEL  
VIRGINIA COMMISSION OF GAME AND INLAND FISHERIES  
(Boat owner must report any change in status and return certificate of number with this form)

Present Owner			
NAME (Please print)	(First)	(Middle)	(Last)
STREET ADDRESS			
CITY OR TOWN	STATE		
I WISH TO REPORT THAT MY ABOVE NUMBERED VESSEL HAS BEEN:			
(Check Appropriate Block)			
<input type="checkbox"/> LOST	<input type="checkbox"/> DESTROYED	<input type="checkbox"/> ABANDONED	
SIGNATURE OF PRESENT OWNER		DA	
TRANSFERRED TO (new owner)			
NAME	(First)	(Middle)	(Last)
STREET ADDRESS			
CITY OR TOWN	STATE		

If you sell a numbered boat you are required to notify the Commission of Game and Inland Fisheries on this "pink" notification form. The new owner cannot obtain a valid Certificate of Number until you do. No fee is required with this notification.

If you buy a numbered boat you are required to apply for a new Certificate of Number to be issued in your name. Use this "white" application form, and be sure to show the correct boat number here.

A five dollar fee must accompany this application.

COMMONWEALTH OF VIRGINIA APPLICATION FOR BOAT NUMBER  
COMMISSION OF GAME AND INLAND FISHERIES

FEES—THREE YEAR REGISTRATION ORIGINAL NO. \$5.00—TRANSFER REGISTRATION \$5.00  
DEALER FEE \$15.00; MANUFACTURERS FEE \$25.00  
ADDITIONAL NUMBERS FOR DEALERS AND MANUFACTURERS \$8.00 EACH  
MAIL WITH CHECK OR MONEY ORDER PAYABLE TO TREASURER OF VIRGINIA  
TO: BOAT SECTION, VIRGINIA GAME COMMISSION, 7 N. 2ND ST., ROX 1642, RICHMOND, VA.

NUMBER ASSIGNED \_\_\_\_\_

EXPIRATION DATE \_\_\_\_\_

FILL IN ALL ITEMS ON THIS FORM AND ON THE TEMPORARY CERTIFICATE ATTACHED  
PLEASE PRINT OR USE TYPEWRITER (See Instructions on Reverse Side)

1. NAME OF BOAT OWNER (First Name, Middle Initial, Last Name)		10. HULL MATERIAL (Check One)	
STREET ADDRESS		<input type="checkbox"/> WOOD <input type="checkbox"/> STEEL <input type="checkbox"/> OTHER (Specify) _____	
CITY OR TOWN STATE		11. PROPULSION (Check One)	
2. OWNER'S YEAR OF BIRTH		<input type="checkbox"/> OUTBOARD <input type="checkbox"/>	
3. ARE YOU AN AMERICAN CITIZEN? YES <input type="checkbox"/> NO <input type="checkbox"/> IF NO, SPECIFY _____		12. FUEL (Check One) <input type="checkbox"/> GASOLINE <input type="checkbox"/>	
4. MAKE OF BOAT SERIAL NO.		13. USE (Check One) <input type="checkbox"/> PLEASURE <input type="checkbox"/> LIVERY <input type="checkbox"/> DEALER <input type="checkbox"/> MANUFACTURER <input type="checkbox"/> COMMERCIAL-PAS <input type="checkbox"/> COMMERCIAL-FISH <input type="checkbox"/> COMMERCIAL-OT	
6. COUNTY OR CITY WHERE BOAT IS PRINCIPALLY KEPT		7. LENGTH OVERALL IN FEET	8. YEAR BUILT (If Known)
9. RESERVED FOR OFFICE (Do not use this space)		14. I (WE) HEREBY CERTIFY THAT I (WE) AM (ARE) THE OWNER(S) OF THE VESSEL DESCRIBED ON THIS FORM AND FURTHER CERTIFY THAT THE DESCRIPTION THEREOF AND ALL OTHER STATEMENTS HEREIN ARE TRUE AND CORRECT.	

Forms are available from the Commission of Game and Inland Fisheries, Box 1642, Richmond, Virginia 23213; from hunting and fishing license agencies; and from most boat dealers.

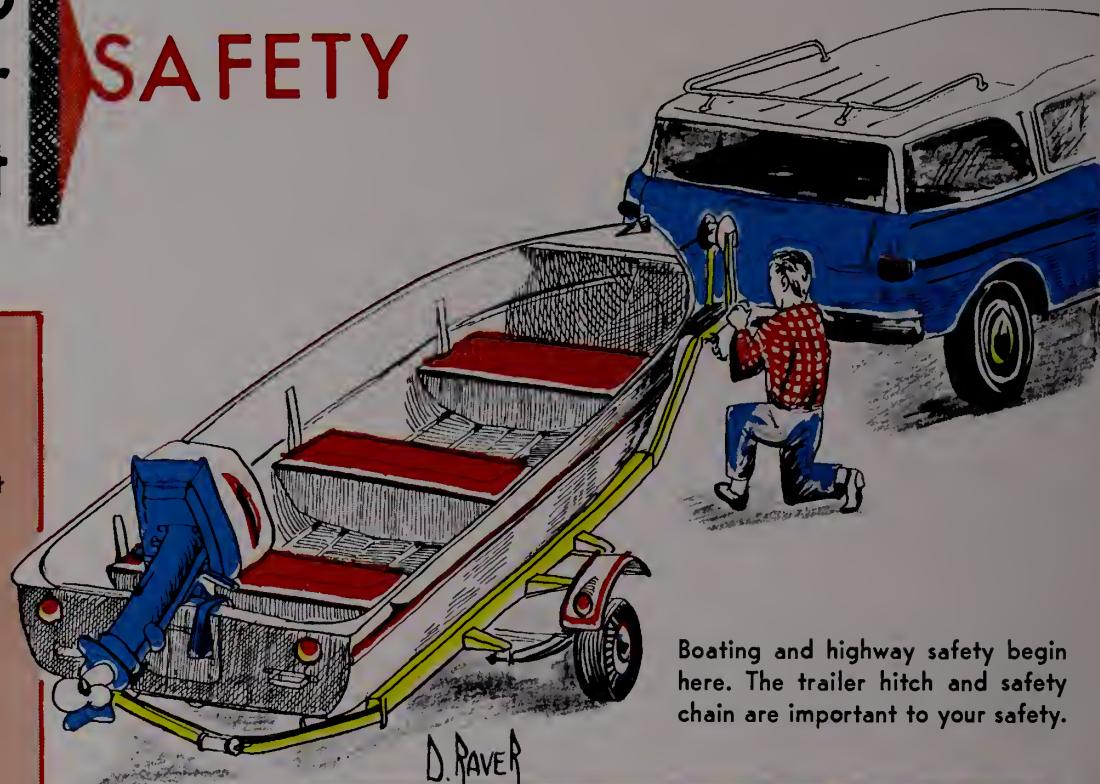
# auto trailer boat

## SAFETY

### CHECK:

- Your Car
- Your Boat
- Your Trailer
- Your Motor
- Your Speed

### CHECK ACCIDENTS!



Boating and highway safety begin here. The trailer hitch and safety chain are important to your safety.



Be extra careful on summer's crowded highways. Be sure you can see behind you. Slow down when pulling a trailer.

Equip and operate your boat safely.  
Use common sense and courtesy  
always.